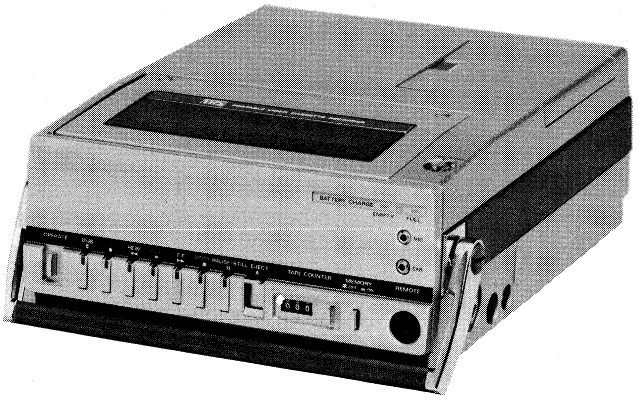
HITACHI

VT-7000E
VT-TU70E
A-V70E

SERVICE MANUAL

No. 1371



VT-7000E

VT-TU70E

A-V70E

PORTABLE VIDEO CASSETTE RECORDER/VIDEO TUNER/AC ADAPTOR

May 1980

TABLE OF CONTENTS

SPECIFICATIONS 5

KEY TO ILLUSTRATIONS 6

DISMANTLING

Deck 7

Adaptor 15

Tuner 16

ADJUSTMENT

Servicing Jigs and Tools 17

ELECTRIC CIRCUIT ADJUSTMENT

Adjustment of Servo Circuit

1. Confirmation of sync separator input signal 18
2. Confirmation of reference oscillator frequency 19
3. Confirmation of capstan sample pulse 19
4. Adjustment of cylinder FG balance 19
5. Adjustment of frame advance speed 19
6. Adjustment of capstan speed 20
7. Confirmation of playback capstan trapezoidal wave 20
8. Confirmation of control pulse 20
9. Adjustment of cylinder speed 20
10. Confirmation of playback cylinder servo 20
11. Confirmation of head switching pulse 21
12. Adjustment of head switching point 21
13. Adjustment of record timing 21
14. Adjustment of tracking preset 22
15. Adjustment of noise phase 22
16. Adjustment of VD phase 22

Adjustment of Indicator Circuit

Overdischarge level adjustment 22

Adjustment of Video Signal circuit

1. Adjustment of carrier set and deviation 23
2. Adjustment of white clip and dark clip 23
3. Adjustment of EE level 24
4. Adjustment of record chroma level 24
5. Adjustment of record current balance 25
6. Adjustment of record luminance level 25
7. Adjustment of peaking and dampling 25
8. Adjustment of playback level 26

Adjustment of Chroma Circuit

1. Adjustment of AFC F_0 26
2. Adjustment of APC F_0 26
3. Adjustment of local F_0 27
4. Confirmation of manual B/W changeover 27
5. Confirmation of SECAM system 27

Adjustment of Audio circuit

1. Adjustment of bias level 28
2. Adjustment of playback level 28
3. Adjustment of noise canceller 28

Adjustment Table of P.C. Boards 29

Adjustment of Tuner/IF Circuit

1. Adjustment of carrier filter and video amplitude 33
2. Adjustment of Audio trap 33
3. Adjustment of AFS 34
4. Adjustment of SIF 34
5. Adjustment of PIF 35
6. Adjustment of AGC 35

MECHANICAL ADJUSTMENT

1. Reel table height 36
2. Latch solenoide position 36
3. Tension pole position 36
4. Checking the back-tension 36
5. Checking the supply sub. brake position 37
6. Main brake torque 37
7. Slack removal torque 37
8. Rewind torque 37
9. Take-up torque 37
10. Fast forward torque 37
11. Supply reel table back-tension 37
12. Take-up reel table brake-tension 37
13. Take-up reel table back-tension in Loading, Unloading, Rec/Pause modes 37
14. Reel lock arm adjustment 37
15. Adjusting the position of the take-up reel table stop detector Hall IC 38
16. Adjusting the DD cylinder Tach head 38
17. Adjusting the counter pulley 38
18. Adjusting the loading/unloading switch 38
19. Adjusting the guide roller (Guide pin) 38
20. Audio and control head position 39
21. Audio/control head height and azimuth adjustments 39
22. Tape travel 39

DIAGRAMS

Overall Block Diagram

Deck 42
Tuner (For the United Kingdom) 45
Tuner (Except for the United Kingdom) 47

Camera Connector

Schematic diagram 49
Circuit board diagram 51

Y Demodulator/Chroma

Schematic diagram 52
Circuit board diagram
  Y Demodulator 55
  Chroma 56
Waveformes 63

Y Modulator/Audio

Schematic diagram 58
Circuit board diagram 61
Waveformes 63

System Control

Schematic diagram 65
Circuit board diagram 75
  Switch 72
  Switching regulator 77
Waveformes 63

Servo

Schematic diagram 68
Circuit board diagram 75
  Cylinder motor 78
  Capstan motor 79
  Take-up end sensor 73
  Supply end sensor 73
  Internal battery jack 74
  Capacitor 74
  Tape sensor lamp 74
  Loading SW 74
  Rotation sensor 74
Waveformes 64

RF Converter

Schemetic diagram 80

RF booster

Schematic diagram 80

Tuner/IF (For UK) (Except for UK)

Schematic diagram 84 90
Tuner internal circuit 86 86
Circuit board diagram 88 93

Program Selector/Preset

Schematic diagram 84 90
Circuit board diagram 87 92

Timer

Schematic diagram 95 95
Circuit board diagram 99 100

Rectifier/Regulator

Schematic diagram 95 95
Circuit board diagram 97 97

Replacement Parts List

Deck 81
Tuner 101
Adaptor 104

EXPLODED VIEW

Deck

Cabinet section (I) 108
Cabinet section (II) 109
Chassis assembly/Cassette housing assembly 110
Chassis section 111
Tape guide section 112

Tuner

Cabinet section 113
Chassis section 114
Adaptor 115

Replacement Parts List

Deck 117
Tuner 120
Adaptor 120

SPECIFICATIONS

DECK

Format:	VHS PAL Standard
Recording:	Rotary Two Head Helical Scan Azimuth Recording
Tape Speed:	23.39 mm/sec.
Tape Width:	12.7 mm
Operation Temperature:	0°C to 40°C
Video:	PAL colour (system I) and CCIR monochrome signals 625 lines. (For the United Kingdom) PAL colour (system B and G) and CCIR monochrome signals 625 lines. (Except for the United Kingdom)
Recording Time:	180 min. (with Hitachi E-180 cassette)
RF Output:	UHF channels 37 (30 — 39 adjustable)
Video Input:	1 Vp-p 75Ω Unbalanced.
Video Output:	1 Vp-p 75Ω Unbalanced.
S/N Ratio (Video):	43 dB
S/N Ratio (Audio):	43 dB
Horizontal Resolution:	Colour 240 lines Monochrome 290 lines
Mic Input:	−69 dB 10 kΩ
Audio Input:	−20 dB 20 kΩ
Audio Output:	−6 dB 500Ω
Audio Frequency Range:	70 Hz to 12 kHz
Power:	DC 12V
Power Consumption:	8W
Cabinet Size:	120 mm (H) × 269 mm (W) × 318 mm (D)
Weight:	5.9 kg

TUNER

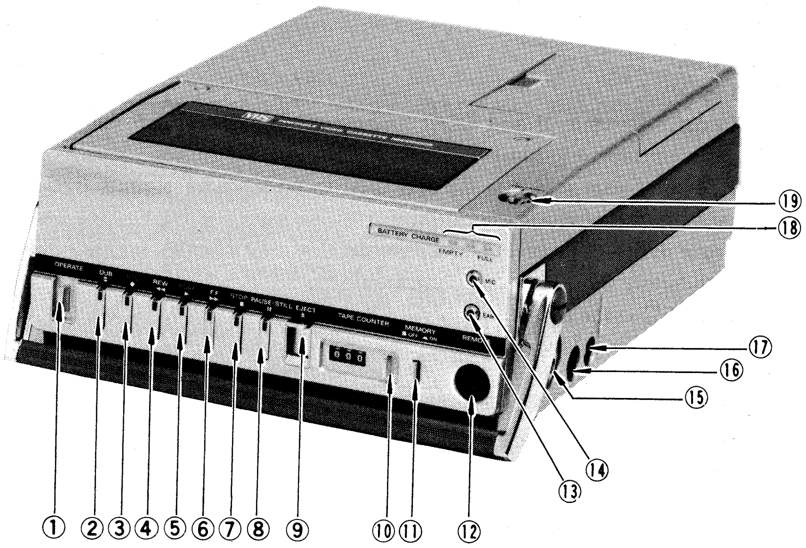
Video Signal:	PAL colour (System I) and CCIR monochrome (For the United Kingdom) PAL colour (System B and G) and CCIR monochrome (Except for the United Kongdom)
Aerial Input (Antenna):	UHF 75Ω
Channel Received:	UHF channels 21 — 69 VHF channels 2 — 12 (Except for the United Kingdom)
RF Output:	UHF 75Ω
Power Supply:	AC 100 — 110V/115 — 127V/200 — 220V/230 — 250V 50 Hz (For the United Kingdom) 50/60 Hz (Except for the United Kingdom)
Power Consumption:	65W
Dimensions:	120 (H) × 258 (W) × 325 (D) mm
Weight:	6.3 kg

ADAPTOR

Aerial Input (Antenna):	UHF 75Ω
RF Output:	UHF 75Ω
Power Supply:	AC 100 — 110V/115 — 127V/200 — 220V/230 — 250V
Power Consumption:	65W
Dimensions:	120 (H) × 120 (W) × 290 (D) mm
Weight:	3.5 kg

KEY TO ILLUSTRATIONS

DECK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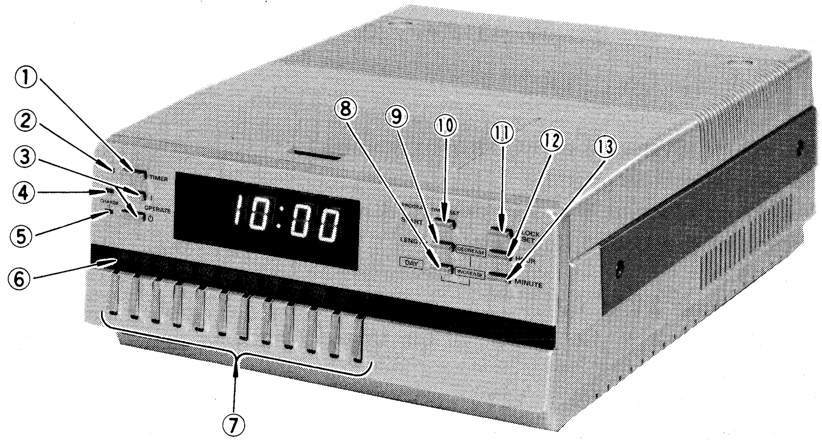
⑭
⑮
⑯
⑰
⑱
⑲
OPERATE
DUB
REW
F.F.
STOP
PAUSE STILL
EJECT
TAPE COUNTER
MEMORY
BATTERY CHARGE
EMPTY
FULL
MIC
EAR
000

1. Operate switch
2. Audio dub button
3. Record button
4. Rewind button
5. Play button
6. Fast forward button
7. Stop button
8. Pause/Still button
9. Eject button
10. Tape counter button
11. Memory switch button
12. Remote jack
13. Earphone jack
14. Microphone jack
15. Camera connector
16. Ext. Batt. jack
17. Camera pause jack
18. Battery indicator
19. Tracking control

TUNER


①
②
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④
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⑥
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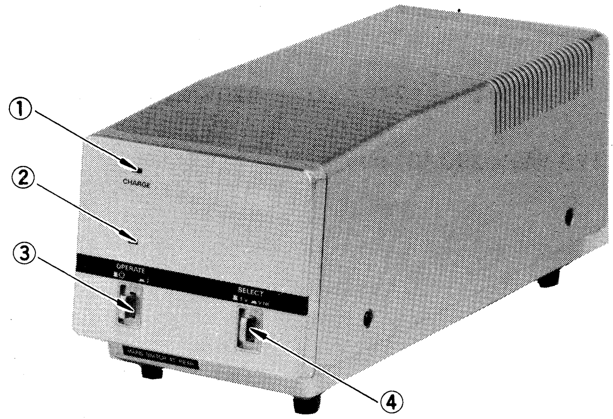
⑧
⑨
⑩
⑪
⑫
⑬
TIMER
OPERATE
10:00
DAY
MINUTE

1. Timer switch
2. Timer indicator
3. Operate ON/OFF switch
4. Operate indicator
5. Charge indicator
6. Channel indicator
7. Channel select button
8. Day button
9. Length button
10. Start button
11. Clock set button
12. Hour button
13. Minute button

ADAPTOR

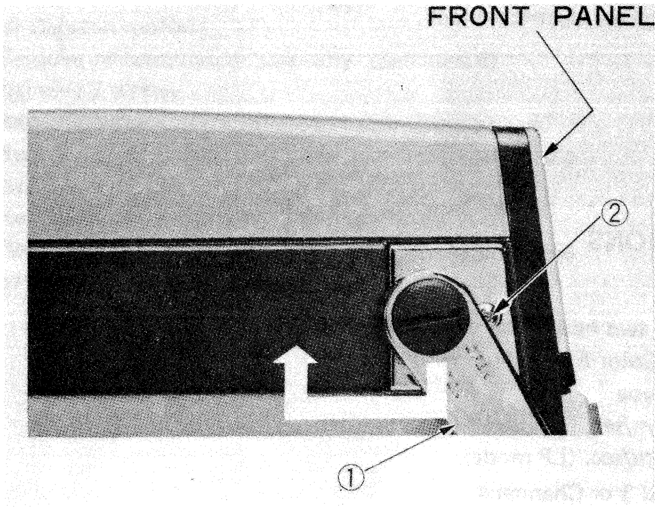

①
②
③
④
CHARGE
OPERATE
SELECT

1. Charge indicator
2. Power indicator
3. Operate switch
4. VTR/TV select switch

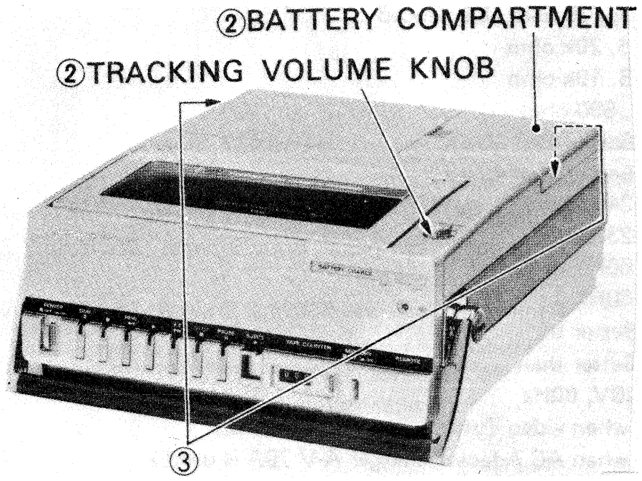
DISMANTLING — DECK

Note: Before beginning disassembly it is important to realize that all screws and bolts are METRIC. Disassembly should be done using METRIC tools .

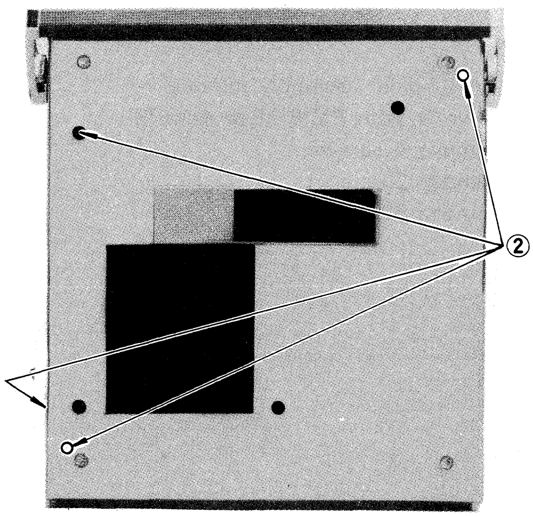
Remove three panels in the order front, top then bottom. If you don't follow this order, the top and bottom panels cannot be removed.



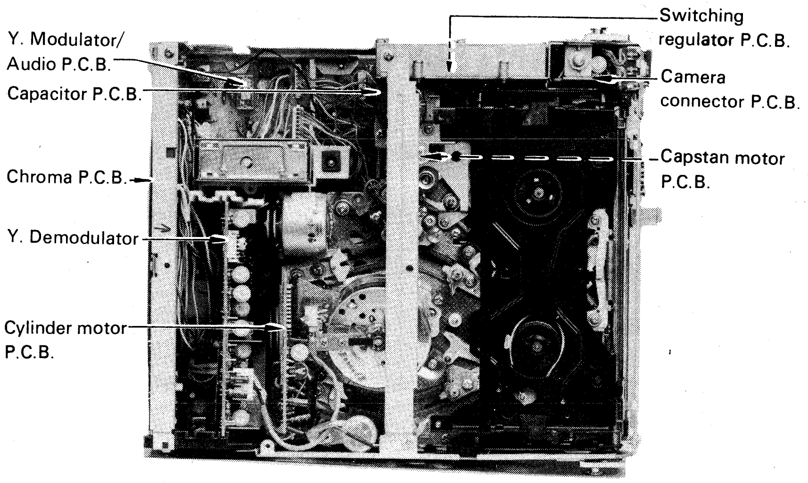
1. Front panel
   1) Before removing the front panel it is necessary to remove the handle.
   2) Remove 2 screws.

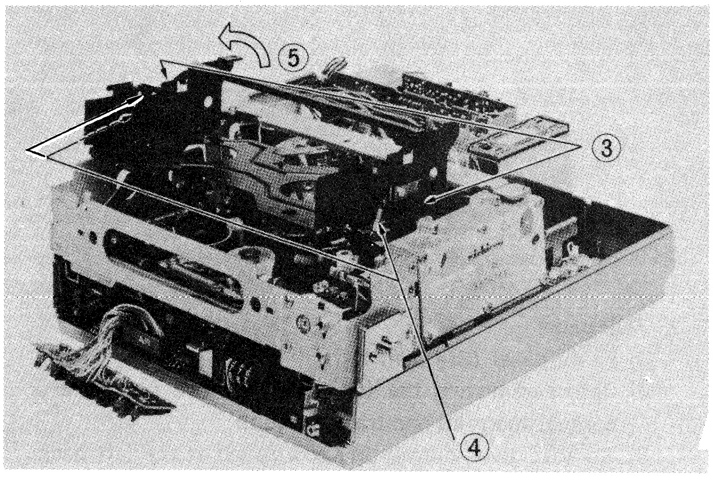


2. TOP panel
   1) Front panel (See item 1)
   2) Before removing the top panel, remove the battery compartment lid and tracking knob.
   3) Remove two screws, one positioned at the left back and the other at the battery compartment.

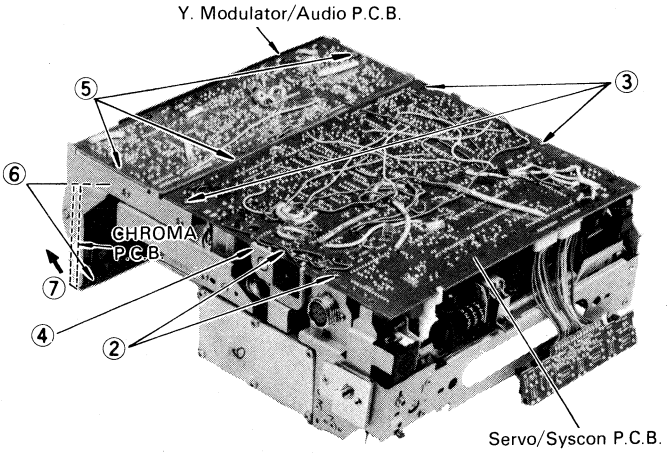


3. Bottom panel
   1) Front panel, Top panel (See item 1, 2)
   2) Remove 4 screws holding the bottom panel.


Y. Modulator/
Audio P.C.B.
Capacitor P.C.B.
Chroma P.C.B.
Y. Demodulator
Cylinder motor
P.C.B.
Switching
regulator P.C.B.
Camera
connector P.C.B.
Capstan motor
P.C.B.

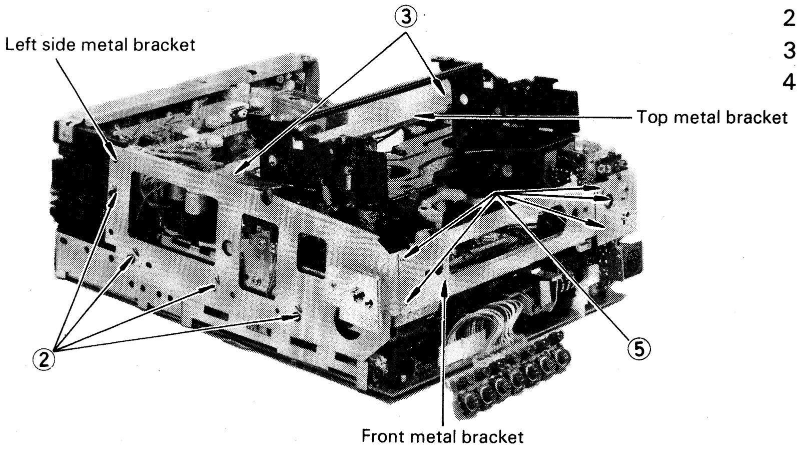


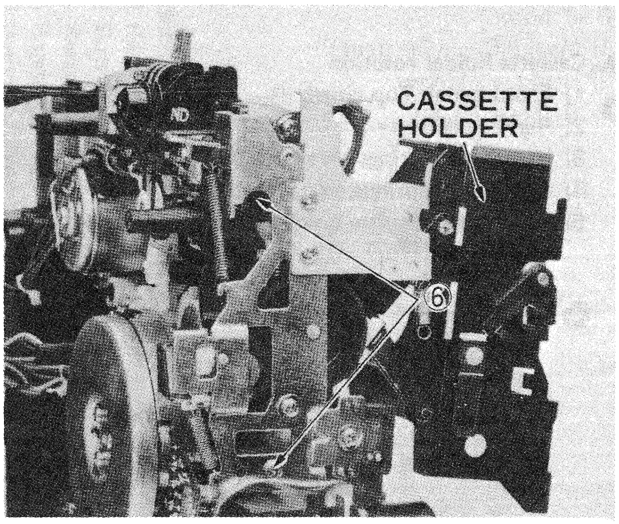
4. **Cassette holder rotation**
   1) **Front panel, Top panel** (See item 1, 2)
   2) **Remove cassette lid.**
   3) **Remove 2 E rings on each side.**
   4) Remove 3 Springs on each side.
   5) **Rotate the cassette holder toward near to you.**

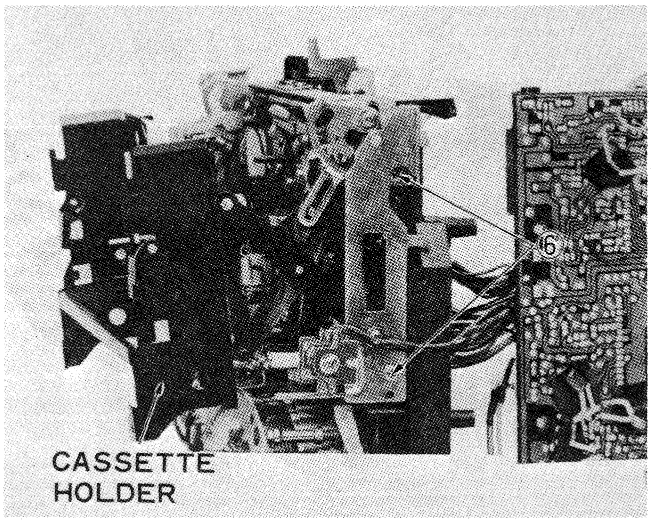

Y. Modulator/Audio P.C.B.
⑤
③
⑥
CHROMA
P.C.B.
⑦
④
②
Servo/Syscon P.C.B.

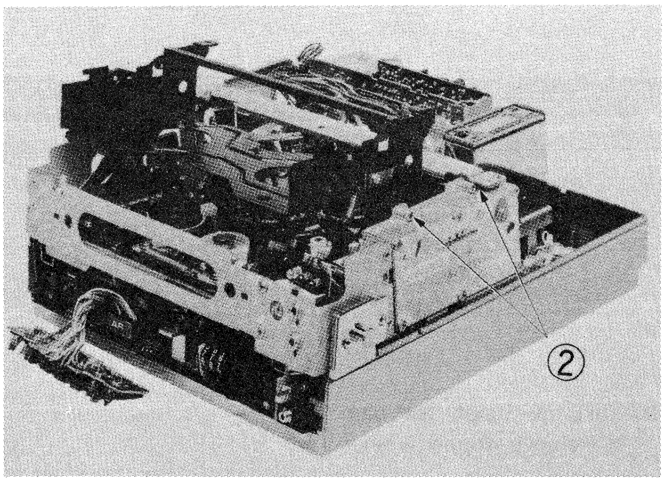
5. Servo/Syscon P.C.B.
   Y-Modulator/Audio P.C.B, Chroma P.C.B.
   1) Front panel, Top panel, Bottom panel (See item 1, 2, 3).
   2) Remove 2 screws holding bracket for Mic and Earphone jacks.
   3) Remove 3 screws.
   4) Disconnect switching regulator connector
   5) Remove 3 screws.
   6) Remove 2 screws.
   7) Rotate chroma P.C.B. toward near to you.

6. Cassette holder assembly removal
   1) Servo/Syscon P.C.B. (See item 5).
   2) Remove 4 screws.
   3) Remove 2 screws.
   4) Remove 5 screws.

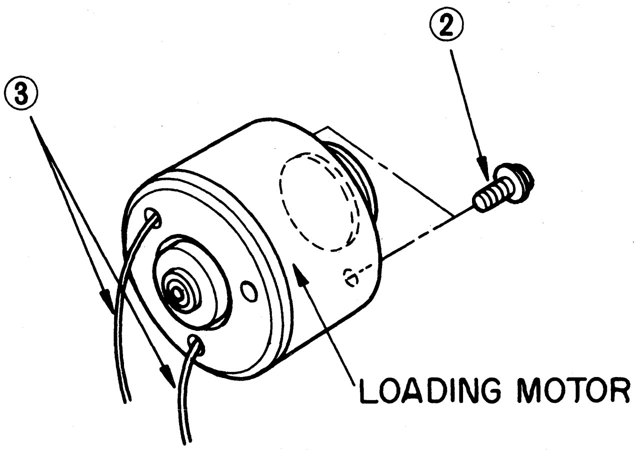

③
Left side metal bracket
Top metal bracket
②
⑤
Front metal bracket


CASSETTE HOLDER
⑥

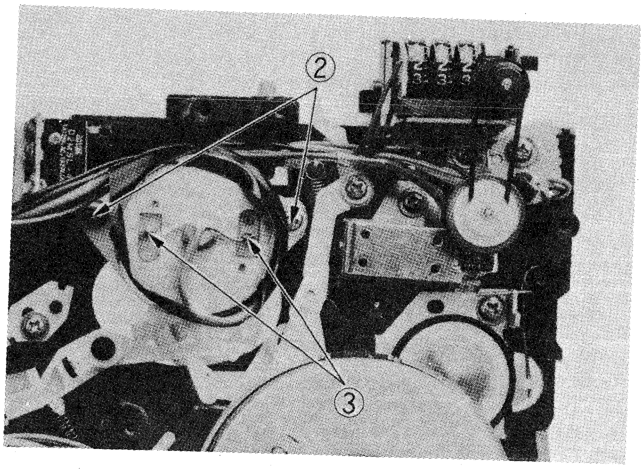

⑥
CASSETTE HOLDER

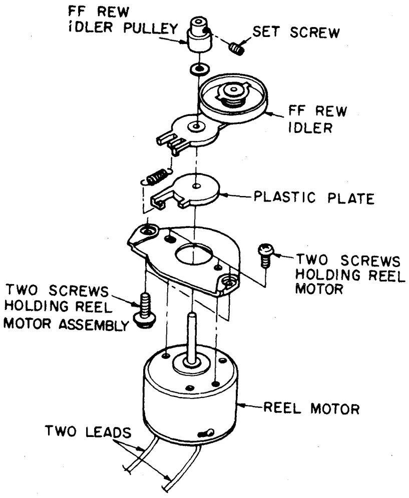


7. Switching regulator
   1) Front panel, Top panel (See item 1, 2)
   2) Remove 2 screws.

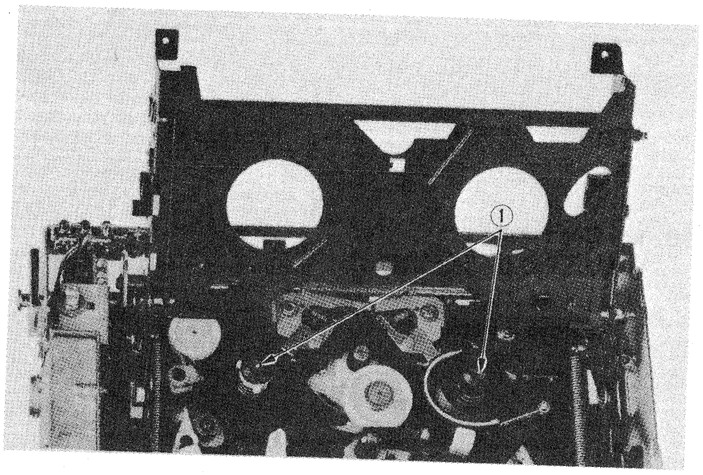

②
③
LOADING MOTOR

8. Loading motor
   1) Main P.C.B. (See item 5)
   2) Remove 2 screws.
   3) Remove 2 leads.



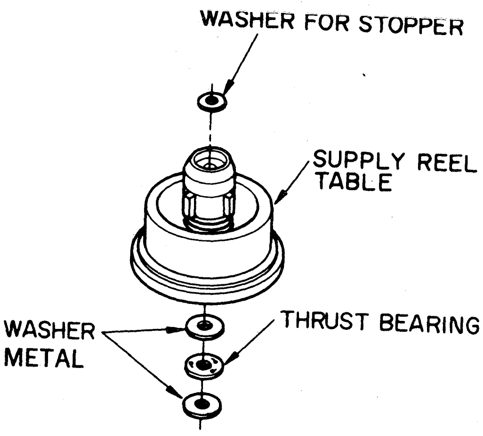

FF REW
IDLER PULLEY
SET SCREW
FF REW
IDLER
PLASTIC PLATE
TWO SCREWS
HOLDING REEL
MOTOR
TWO SCREWS
HOLDING REEL
MOTOR ASSEMBLY
REEL MOTOR
TWO LEADS

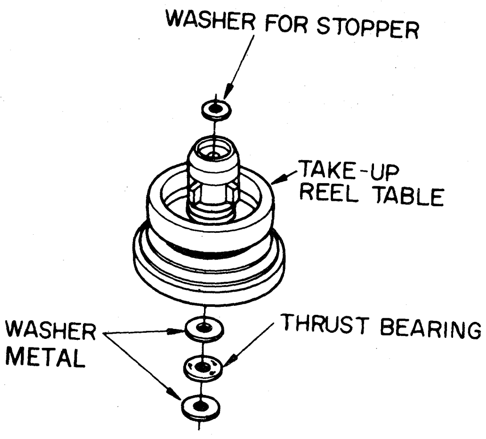
9. Reel motor
   1) Main P.C.B. (See item 5)
   2) Remove 2 screws.
   3) Remove 2 leads.

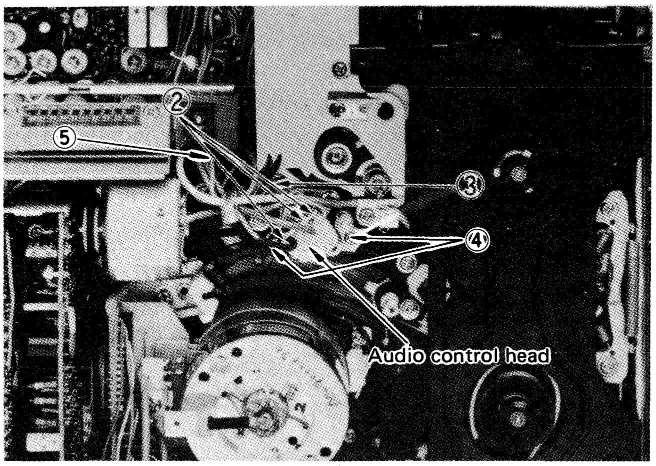


10. Take-up, Supply reel disk
    1) Remove stopper washer.

[Note] 1. Pay particular attention to the washer and thrust bearing located under the reel disk as they determine the proper disk height.
2. Before removing the supply reel disk, it will be necessary to remove the tension band.

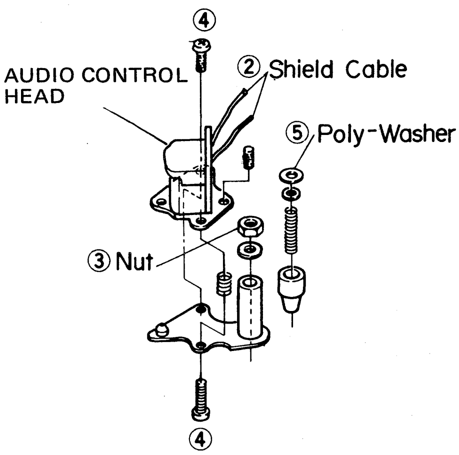

WASHER FOR STOPPER
SUPPLY REEL
TABLE
WASHER
METAL
THRUST BEARING

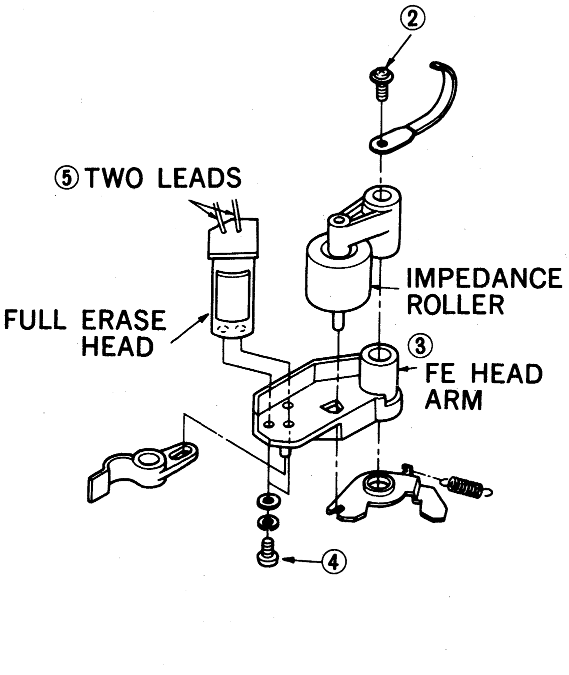

WASHER FOR STOPPER
TAKE-UP
REEL TABLE
WASHER
METAL
THRUST BEARING


②
⑤
③
④
Audio control head

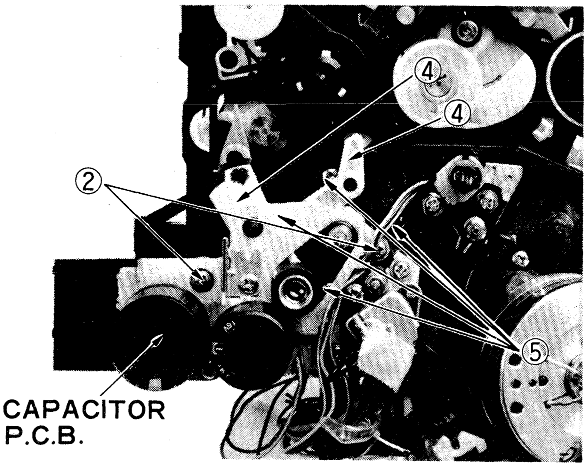
11. Audio control head
    1) Front panel, Top panel (See item 1, 2)
    2) Unsolder shield cable.
    3) Remove 1 nut.
    4) Remove 2 screws.
    5) Remove 1 poly-washer

[Note]
Replace with a new A/C Head. It is necessary to adjust Head height, angle, X value etc.

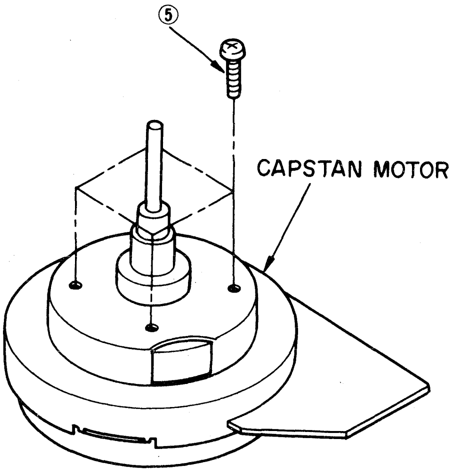

④
AUDIO CONTROL HEAD
② Shield Cable
⑤ Poly-Washer
③ Nut
④

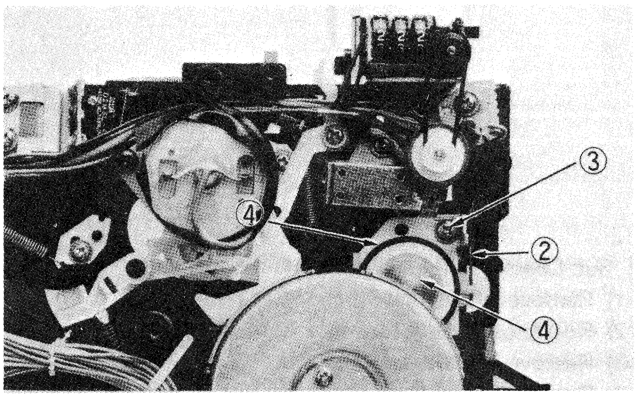

②
⑤ TWO LEADS
IMPEDANCE ROLLER
FULL ERASE HEAD
③
FE HEAD ARM
④

12. Full erase head
    1) Front panel, Top panel (See item 1, 2)
    2) Remove 1 screw.
    3) Remove F E head arm.
    4) Remove 2 screws.
    5) Unsolder the two leads.

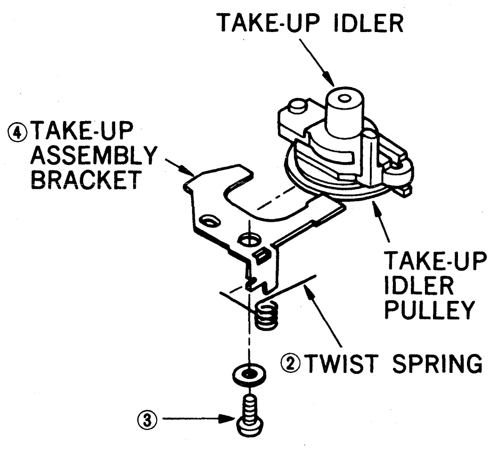

④
④
②
⑤
CAPACITOR
P.C.B.

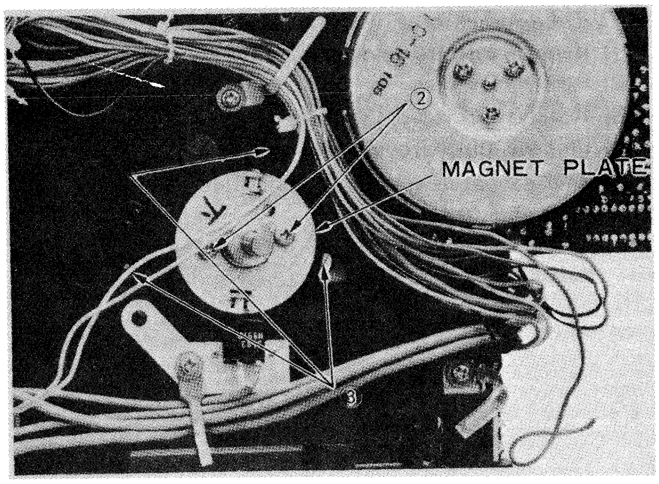
13. D-D capstan motor
    1) Remove cassette holder assembly. (See item 6)
    2) Remove 2 screws.
    3) Remove spring from spring arm to pinch roller arm.
    4) Remove pinch roller arm and lever for connecting lever.
    5) Remove 4 screws.
    6) Remove D-D Capstan Motor gently towards the bottom.


⑤
CAPSTAN MOTOR

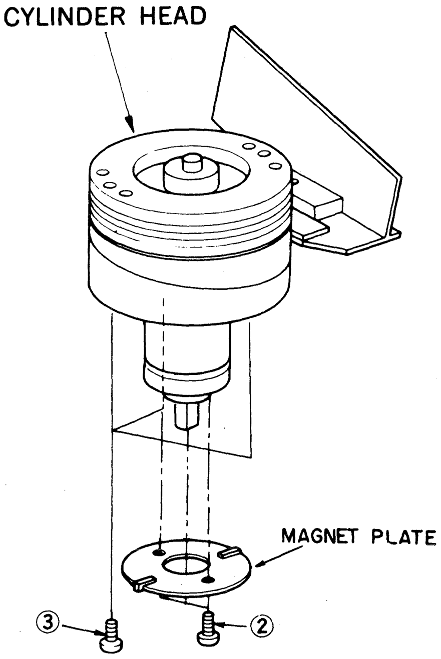


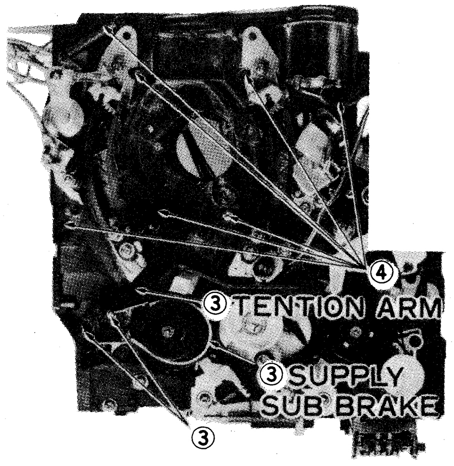
14. Take-up idler
    1) Remove Main P.C.B. (See item 5)
    2) Remove Take -up Idler twist spring.
    3) Remove screw holding take-up Assembly Bracket.
    4) Remove Take -up Assembly and Bracket simultaneously towards the bottom.


TAKE-UP IDLER
④TAKE-UP ASSEMBLY BRACKET
TAKE-UP IDLER PULLEY
②TWIST SPRING
③

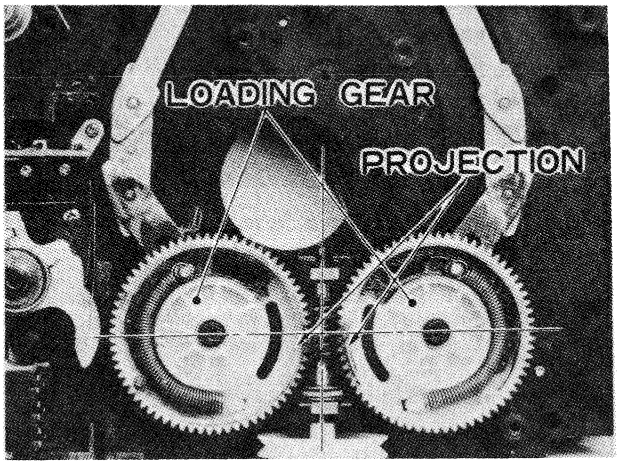

②
MAGNET PLATE
③

15. D-D cylinder head
    1) Remove Main P.C.B. (See item 5)
    2) Remove 2 screws.
    3) Remove 3 screws.


CYLINDER HEAD
MAGNET PLATE
③
②

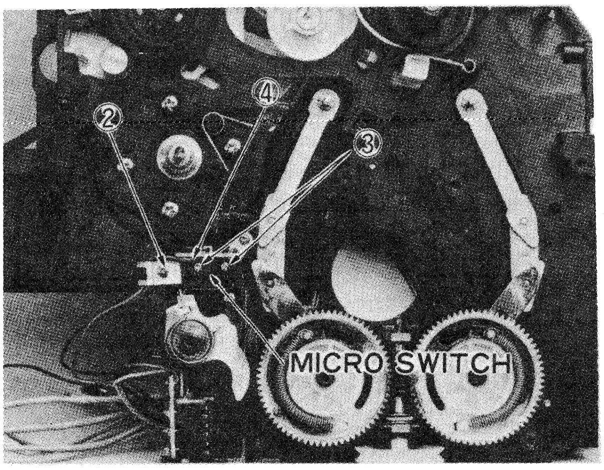

④
③TENTION ARM
③SUPPLY SUB BRAKE
③

16. Sub Chassis
    1) Remove D-D cylinder head (See item 15)
    2) Rotate cassette holder (See item 4)
    3) Remove E-ring for tension arm and supply sub Brake.
    4) Remove 12 screws.

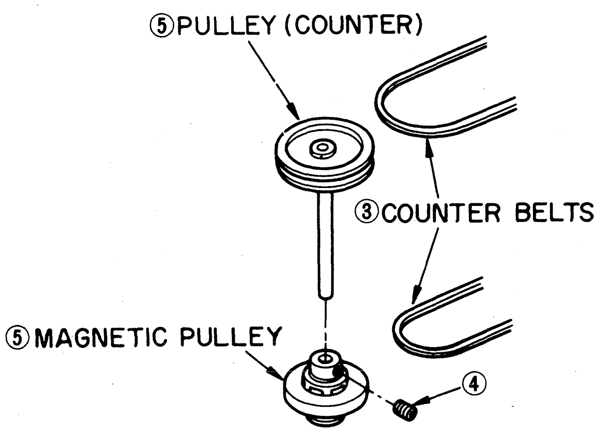

LOADING GEAR
PROJECTION

17. Loading gear
    1) Remove sub chassis (See item 16)

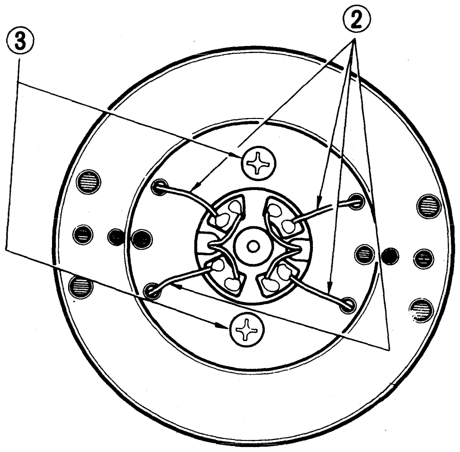
[Note]
Be careful to ensure that the projections inside the gearwheels are in a straight line when replacing the loading gear.


②
④
③
MICRO SWITCH

18. Micro switch (4) (pause switch)
    1) Remove sub chassis (See item 16)
    2) Remove 1 screw.
    3) Remove 2 screws.
    4) Unsolder 2 leads.


⑤PULLEY (COUNTER)
③COUNTER BELTS
⑤MAGNETIC PULLEY
④

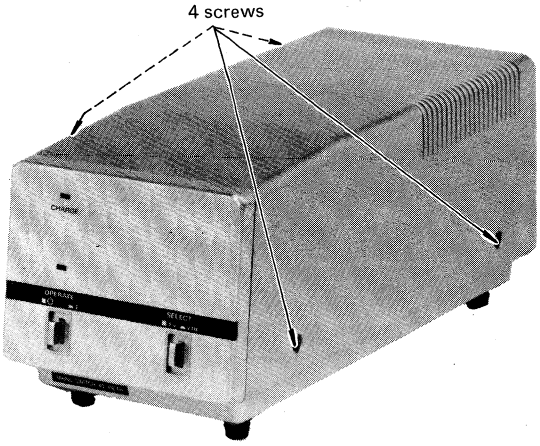
19. Counter pulley
    1) Remove Main P.C.B. (See item 5)
    2) Rotate cassette holder (See item 4)
    3) Remove 2 counter belts.
    4) Remove set screw holding pulley using HEX WRENCH.
    5) Remove pulley with shaft towards the top and magnetic pulley towards the bottom.

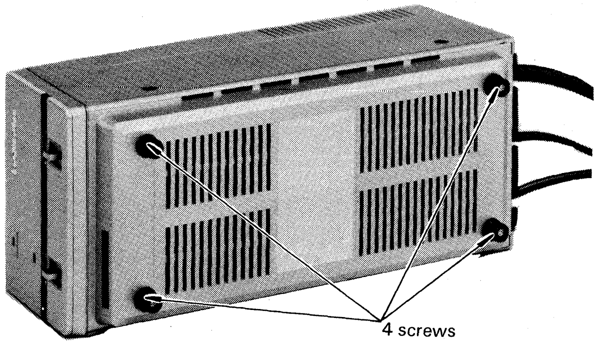


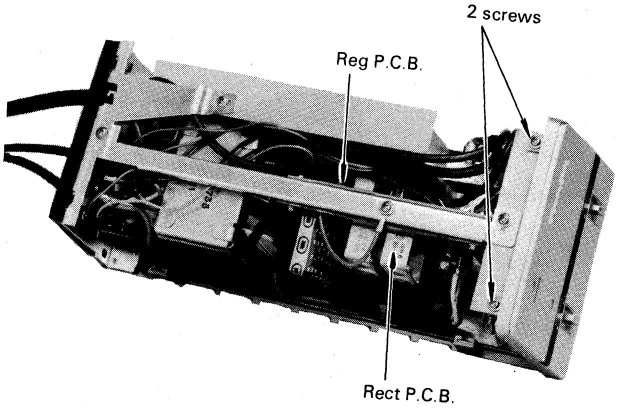
20. Upper cylinder
    1) Remove Front panel, Top panel (See item 1, 2)
    2) Unsolder 4 leads.
    3) Remove 2 screws.

[Note]
Do not touch either video head (located in base of upper cylinder) during servicing.

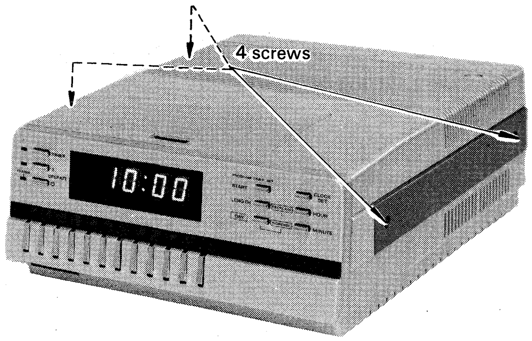
DISMANTLING – ADAPTOR

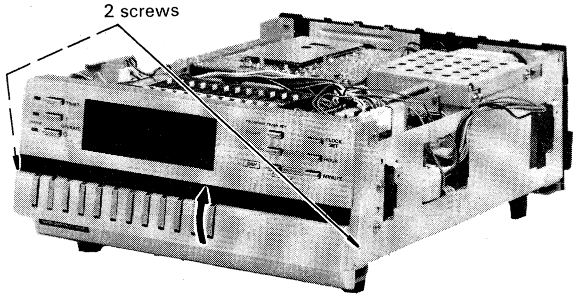

4 screws
CHARGE
OPERATE
SELECT

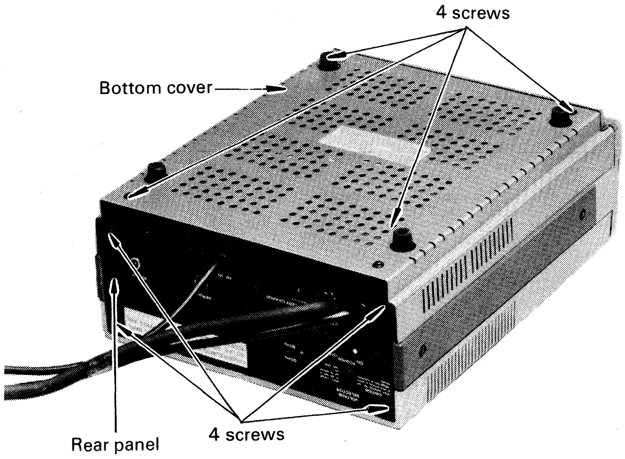


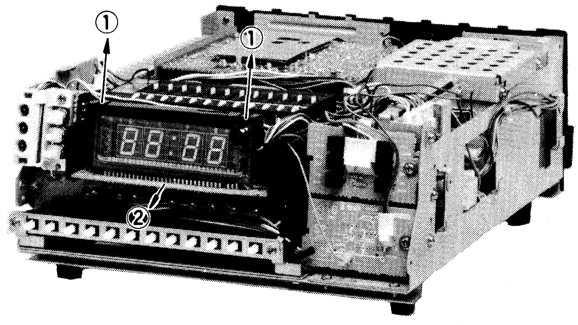

2 screws
Reg P.C.B.
Rect P.C.B.

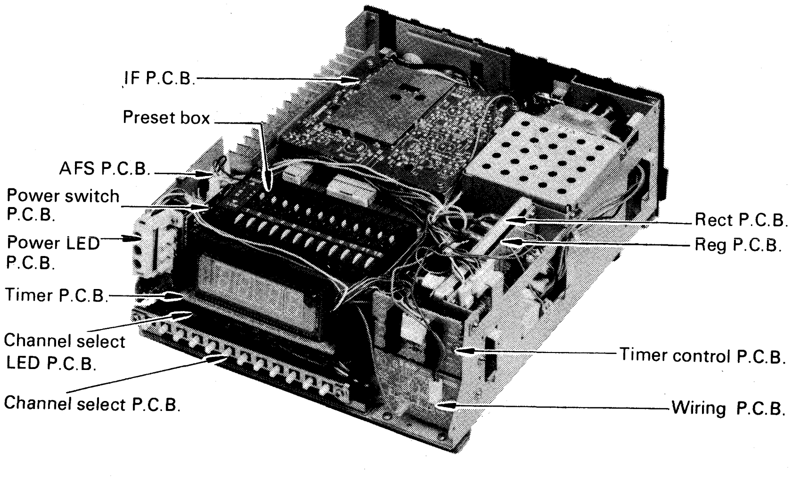
DISMANTLING — TUNER


4 screws
10:00



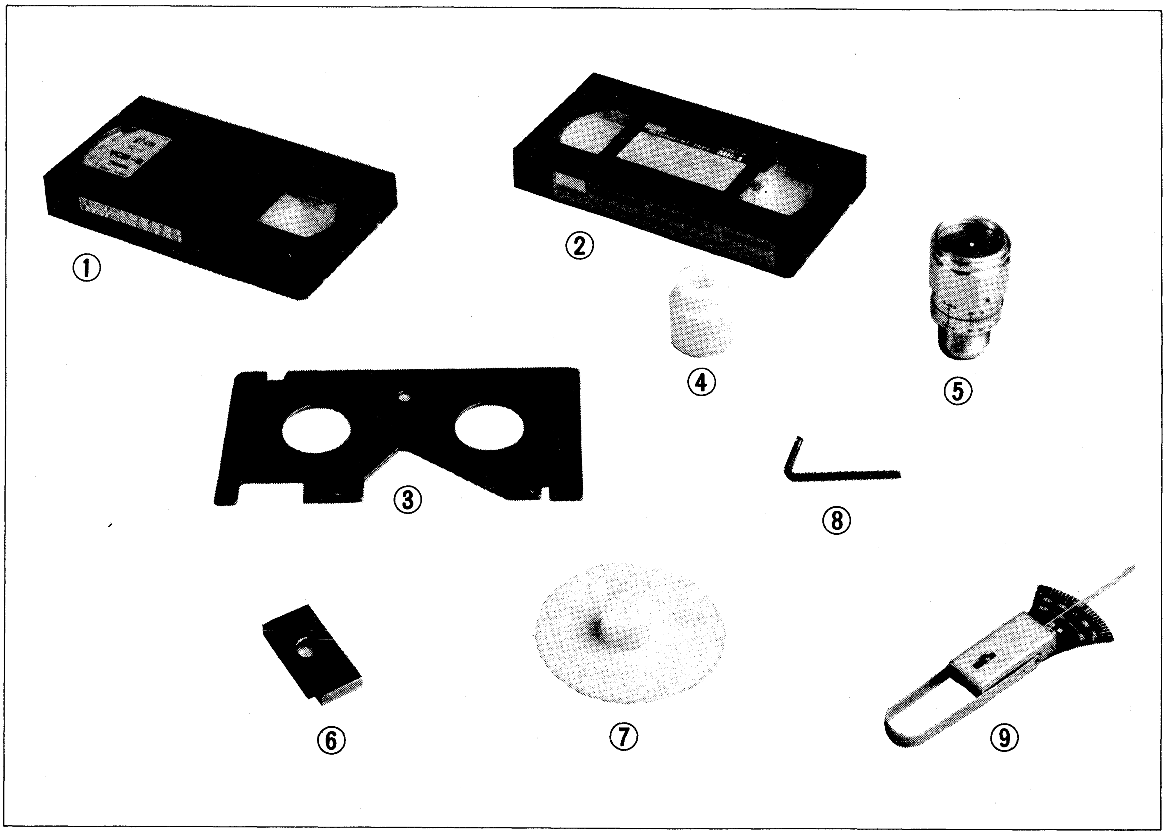

4 screws
Bottom cover
Rear panel
4 screws




IF P.C.B.
Preset box
AFS P.C.B.
Power switch P.C.B.
Power LED P.C.B.
Timer P.C.B.
Channel select LED P.C.B.
Channel select P.C.B.
Rect P.C.B.
Reg P.C.B.
Timer control P.C.B.
Wiring P.C.B.

ADJUSTMENT

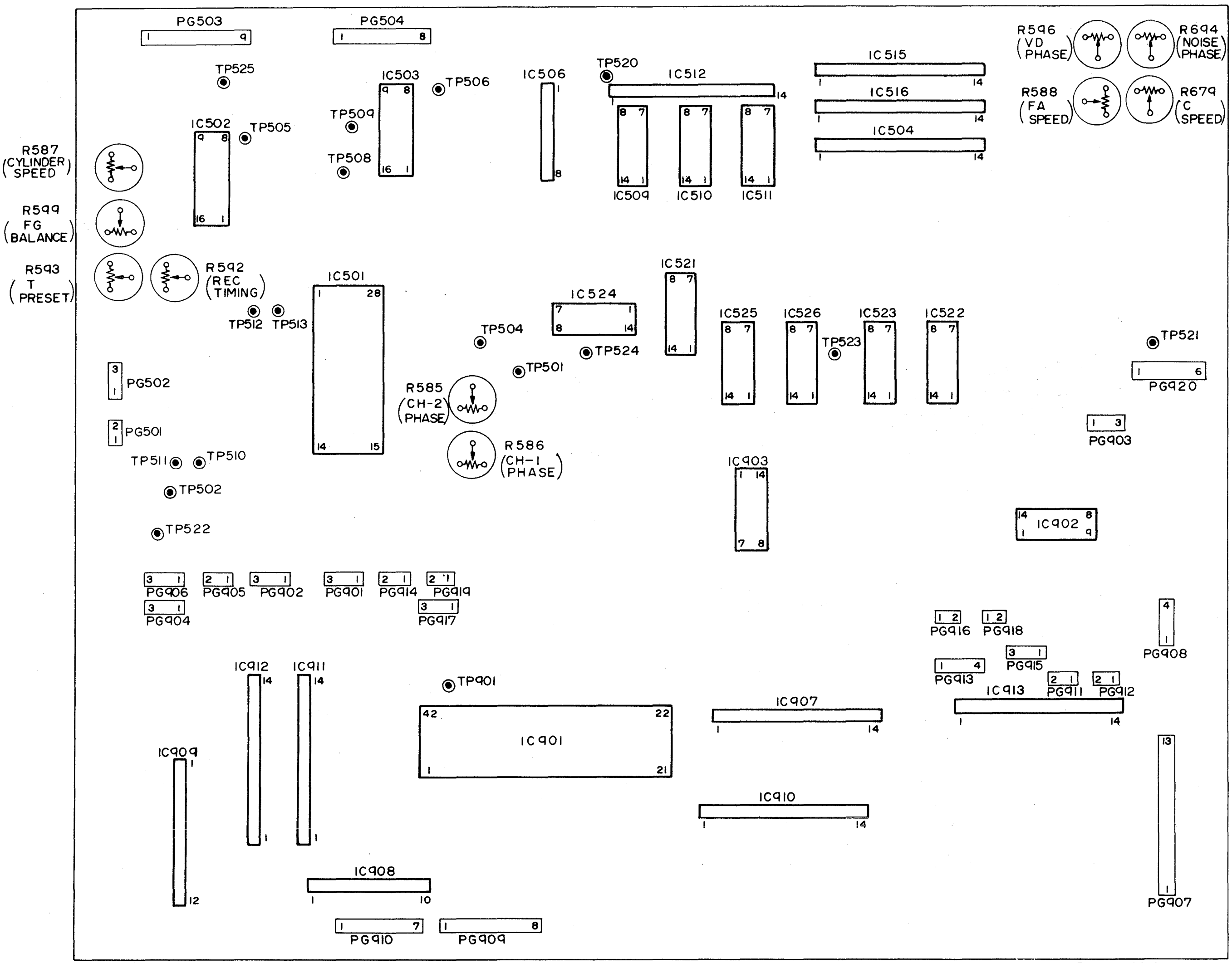
SERVICING JIGS AND TOOLS



① Back Tension Meter
② Alignment Tape
③ Height Reference Plate
④ Torque Gauge Adaptor
⑤ Torque Gauge
⑥ Reel Table Height Gauge
⑦ Tension Measurement Reel
⑧ Hexagonal Wrench
⑨ Fan Type Tension Gauge

ELECTRICAL CIRCUIT ADJUSTMENT

ADJUSTMENT OF SERVO CIRCUIT


PG503
PG504
TP525
IC503
TP506
IC506
TP520
IC512
IC515
IC516
IC504
R596 (VD PHASE)
R694 (NOISE PHASE)
R588 (FA SPEED)
R679 (C SPEED)
IC502
TP505
TP509
TP508
IC509
IC510
IC511
R587 (CYLINDER SPEED)
R599 (FG BALANCE)
R593 (T PRESET)
R592 (REC TIMING)
TP512
TP513
IC501
IC524
IC521
IC525
IC526
IC523
IC522
TP523
TP521
TP504
TP524
TP501
PG502
PG920
R585 (CH-2 PHASE)
R586 (CH-1 PHASE)
PG501
TP511
TP510
TP502
IC903
PG903
IC902
TP522
PG906
PG905
PG902
PG901
PG914
PG919
PG904
PG917
PG916
PG918
PG908
PG915
PG913
IC913
PG911
PG912
IC912
IC911
TP901
IC907
IC909
IC901
IC910
IC908
PG910
PG909
PG907

SERVO/SYSTEM CONTROL P.C.B (Parts side)

1. **Confirmation of sync separator input signal**
   1) Load a blank tape and record colour bar signal (or TV signal).
   2) Connect a scope probe (2V/div.; 5 ms/div.) to between R651 and CN402.
   3) Confirm that the level of composite sync signal is approx. 8 Vp-p. (Fig. 2)

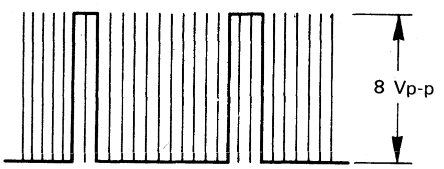


Fig. 2

2. Confirmation of reference oscillator frequency

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 — 24.
3) Confirm that approx. 6.5 Vp-p, 40.0 ms trapezodial wave at PB, 47.6 ms trapezoidal wave at REC is generated. (Fig. 3)

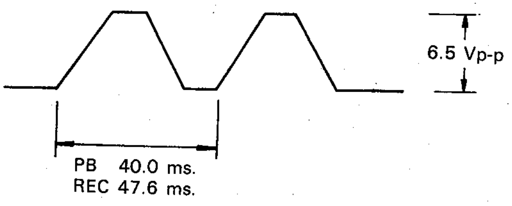


Fig. 3

3. Confirmation of capstan sample pulse

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 — 27.
3) Confirm that approx. 4.5 Vp-p square wave is generated. (Fig. 4)

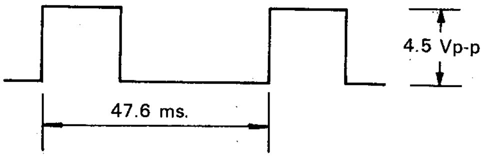


Fig. 4

4. Adjustment of cylinder FG balance

1) Load a blank tape and set the unit to RECORD mode.
2) Connect a scape probe to TP525.
3) Adjust FG control R599 so that the variation of ripple level is minimum. (Fig. 5).

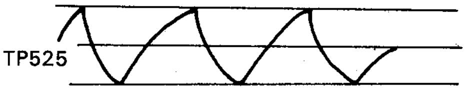


Fig. 5

5. Adjustment of frame advance speed

1) Load a alignment tape and playback it.
2) Connect a scope probe to TP509.
3) Place the unit in the frame advance mode.
4) Adjust frame advance speed control (R588) so that the cycle of sawtooth wave is 27 ms.

6. Adjustment of capstan speed

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP504.
3) Short-circuit TP512 and TP513.
4) Observe the differential pulse which indicates sample position of trapezoidal wave, and adjust capstan speed control (R679) so that the pulse stops as compared with a trapezoidal wave.
5) Open-circuit TP512 and TP513, and confirm that the positive differential pulse stops at about the center of the rising slope of trapezoidal wave. (Fig. 6)

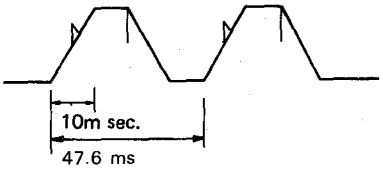


Fig. 6

7. Confirmation of playback capstan trapezoidal wave

1) Load a alignment tape and playback it.
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP504.
3) Confirm that approx. 6.5 Vp-p, 40.0 ms trapezoidal wave and the positive differential pulse indicating sample position is at about the center of the rise slope of trapezoidal wave.

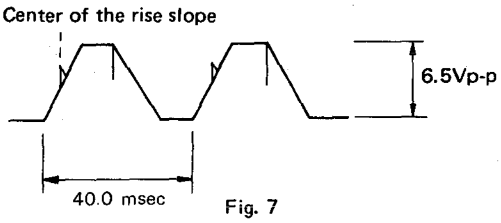


Fig. 7

8. Confirmation of control pulse

1) Insert a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 – 4.
3) Confirm that approx. 4.5 Vp-p, 40.0 msec rectangular wave is generated.

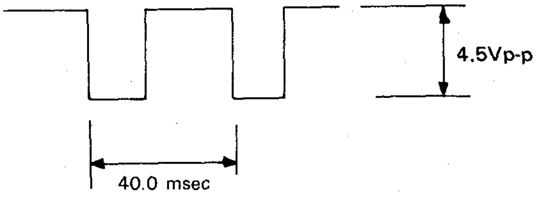


Fig. 8

9. Adjustment of cylinder speed

1) Load a blank tape and record colour bar signal (or TV signal).
2) Short-circuit TP510 and TP511.
3) Apply external synchronization with the signal from TP501.
4) Connect a scope probe (2V/div.; 5 ms/div.) to TP502.
5) Adjust cylinder speed control (R587) so that the differential pulse stops as compared with a trapezoidal wave.
6) Open-circuit TP510 and TP511, and confirm that the differential pulse stops at about the center of the fall slope of trapezoidal wave.

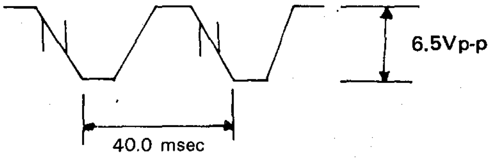


Fig. 9

10. Confirmation of playback servo

1) Insert an alignment tape and playback it.
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP502.
3) Confirm that the positive differential pulse indicating sample position is at about the center of the fall slope of trapezoidal wave.

11. Confirmation of head switching pulse

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP501.
3) Confirm that approx. 8.5 Vp-p, 40.0 msec square wave is generated.

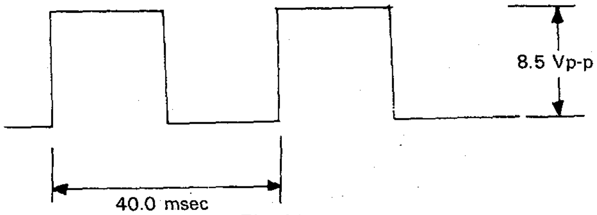

8.5 Vp-p
40.0 msec

Fig. 10

12. Adjustment of head switching point

This adjustment positions the video head switching point so that the head switching occurs 6.5 horizontal lines before the start of the vertical sync pulse or 3 lines before the start of equalizing pulse.

1) Load an alignment tape and playback it.
2) Connect a scope probe (0.1V/div.; 200 μs/div.) to video output jack on the rear of instrument.
3) Set the synchronizing range of the oscilloscope to "EXT".
4) Apply synchronization with the signal (square wave) from TP501.
5) Set the sync slope of the oscilloscope to "−".
6) Adjust CH-1 phase control (R586) so that the trigger position is 6.5H before the start of the vertical sync pulse.
7) Set the sync slope of the oscilloscope to "+".
8) Adjust CH-2 phase control (R585) in the same way.

NOTE: If is difficult to count 6.5H, so adjust R586 and R585 so that the equivalent pulse is approx. 220 μsec (3.5H) after trigger position.
If head switching occurs too soon, a narrow noise band may appear at the bottom of the picture.
If the head switching pulse is late, noise can be introduced during vertical sync, resulting in possibly vertical sync problems.

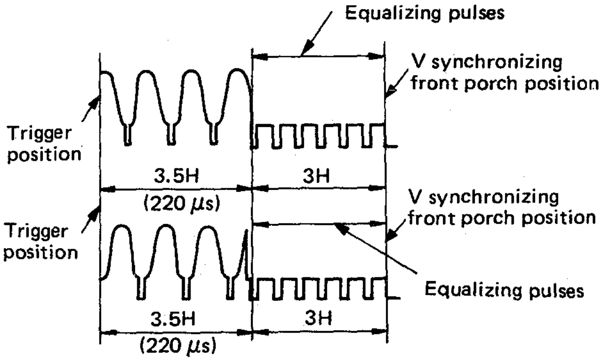

Equalizing pulses
V synchronizing front porch position
Trigger position
3.5H
(220 μs)
3H
V synchronizing front porch position
Trigger position
Equalizing pulses
3.5H
(220 μs)
3H

Fig. 11

13. Adjustment of record timing

1) Load a blank tape and record colour bar signal (or TV signal).
2) connect a scope probe (0.5V/div.; 100 μs/div.) to video output jack.
3) Set the synchronizing range of oscilloscope to "EXT".
4) Apply synchronization with the signal (square wave) from TP501.
5) Adjust record timing control (R592) so that the trigger position is 6.5H before the start of the vertical sync pulse.

14. Adjustment of tracking preset

1) Load a blank tape and record colour bar signal (or TV signal) for 1 — 2 minutes.
2) Connect a scope probe to TP205 (FM output signal).
3) Set the synchronizing range of the oscilloscope to "EXT" and apply synchronization with the signal (square wave) from TP201 of Y Demodulator board.
4) Rewind the tape to the beginning of item (1) recording and playback the recorded section.
5) Set the tracking volume to its click position.
6) Adjust tracking preset control (R593) so that the falling point of CH-1 signal agrees with that of CH-2 signal.

NOTE: After performing this adjustment, check and adjust as in "After replacing upper cylinder".

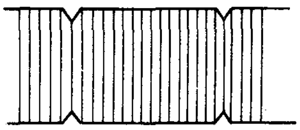


Fig. 12

15. Adjustment of noise phase

1) Playback the tape which was recorded on this VTR.
2) Connect an oscilloscope to TP501 and TP524 and set the oscilloscope to the "CHOP" mode.
   Set the slope of the channel (TP524 side) to "—".
3) Adjust R694 (Noise Phase) so that the pulse at TP501 by 3.5 ± 0.1 ms.

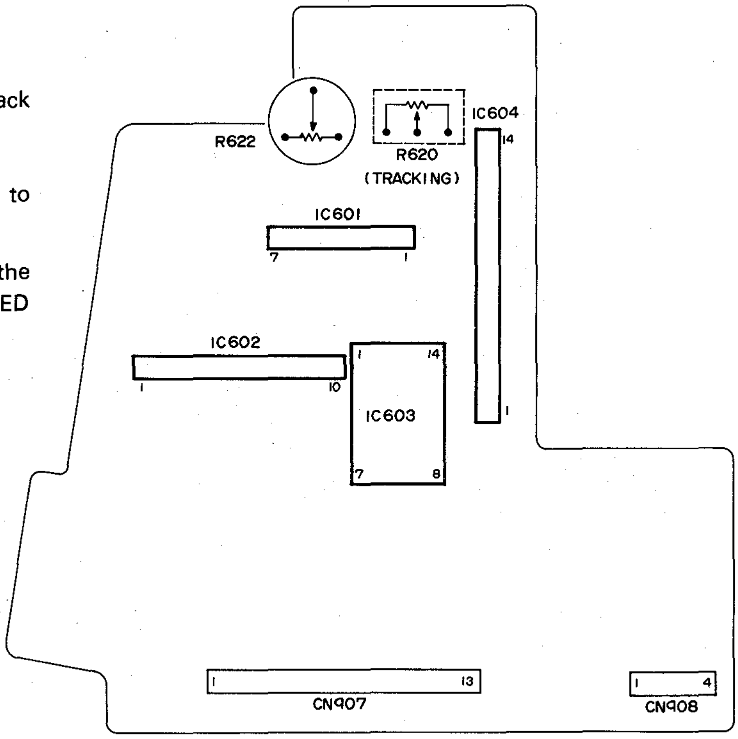
16. Adjustment of VD phase

1) Playback the tape which was recorded on this VTR in STILL mode.
2) Adjust R596 so that the fluctuation of the picture becomes minimum.

ADJUSTMENT OF INDICATOR CIRCUIT

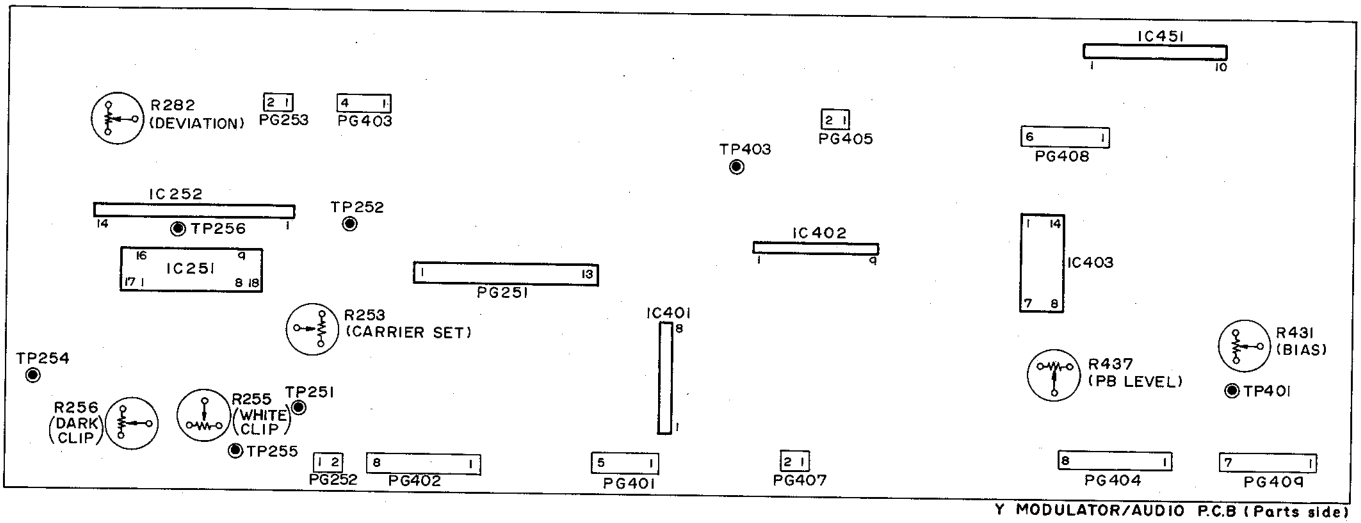
Overdischarge level adjustment

1) Connect DC power supply to the Internal battery jack of the unit.
2) Place the unit in "Stop" mode.
3) Set output voltage of the DC power supply to $10.9\ ^{+0.1}_{-0}$ V.
4) Adjust Overdischarge level control (R622) so that the brightness between a red LED (D607) and green LED (D606) may be same.



CAMERA CONNECTOR P.C.B (Parts side)

ADJUSTMENT OF VIDEO SIGNAL CIRCUIT


IC451
R282 (DEVIATION)
PG253
PG403
TP403
PG405
PG408
IC252
TP256
TP252
IC251
IC402
IC403
PG251
R253 (CARRIER SET)
IC401
R431 (BIAS)
TP254
R437 (PB LEVEL)
TP401
R256 (DARK CLIP)
R255 (WHITE CLIP)
TP251
TP255
PG252
PG402
PG401
PG407
PG404
PG409

Y MODULATOR/AUDIO P.C.B (Parts side)

1. Adjustment of carrier set and deviation

1) Load the dummy plug into the video input jack located on the back of instrument.
2) Connect the 22 kΩ resistor between TP256 and TP255 of IC251.
3) Connect the frequency counter to TP252.
4) Place the instrument in the "RECORD" mode.
5) Turn dark clip control R256, white clip control R255 and deviation control R282 fully counter clockwise.
6) Adjust carrier set control R251 so that the frequency is 3.8 MHz ± 0.1 MHz.
7) Pull out the dummy plug inserted into the video input jack and remove the resistor between pins 13 and 17 of IC251 and input the colour bar signal (half-colour bar signal) of which level is approx. 1 Vp-p and V/S is 7/3 with 100% white signal to the video input jack.
8) Connect a scope probe to TP251.
9) Adjust deviation control R282 so that the video signal is 0.88 Vp-p.

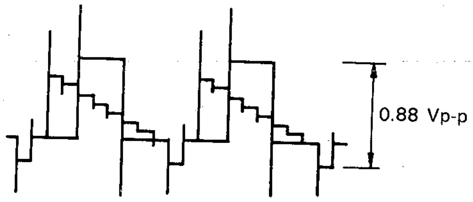


Fig. 13

2. Adjustment of white clip and dark clip

1) Input the colour bar signal (half-colour signal) of which level is approx 1 Vp-p and V/S is 7/3 with white signal to the video input jack.
2) Connect a scope probe (0.5V/div.; 20 μsec/div.) to TP251.
3) Assuming that the white signal is 100% as shown in the figure, adjust white clip control R255 so that overshoot appears 75 ±5% on the white peak side, and adjust dark clip control R256 so that the undershoot appears 50 ±5% on the sync tip side.

NOTE: Perform this adjustment after checking that the V/S of video input signal is 7/3 and the adjustment carrier set and deviation is completed.

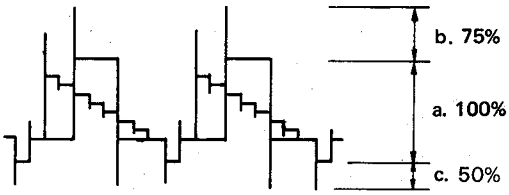
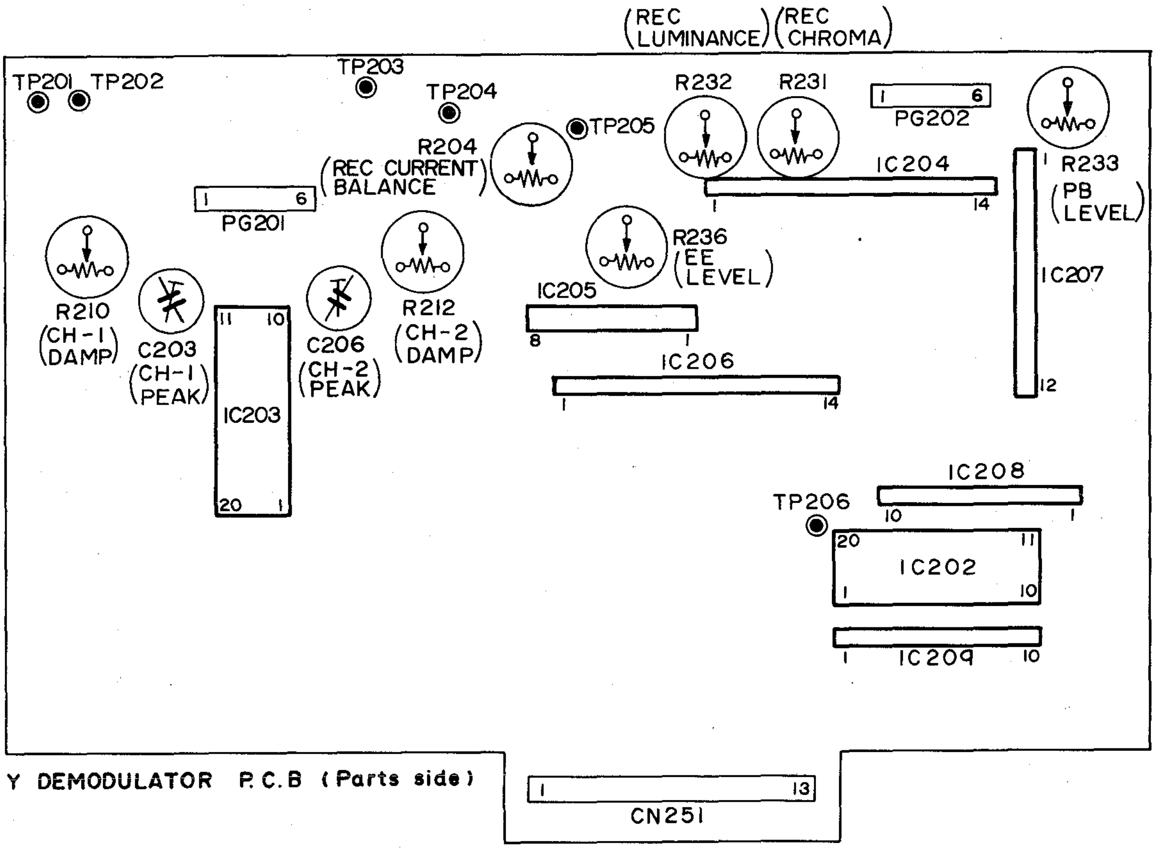

b. 75%
a. 100%
c. 50%

Fig. 14


REC LUMINANCE
REC CHROMA
TP201
TP202
TP203
TP204
TP205
R204
REC CURRENT BALANCE
R232
R231
PG202
R233
PB LEVEL
IC204
PG201
R236
EE LEVEL
IC205
IC207
R210
CH-1 DAMP
C203
CH-1 PEAK
IC203
C206
CH-2 PEAK
R212
CH-2 DAMP
IC206
IC208
TP206
IC202
IC209
CN251

Y DEMODULATOR P.C.B (Parts side)

NOTE: The following adjustment for video circuit can be performed after the adjustments of video circuit on Y MODULATOR board are completed.

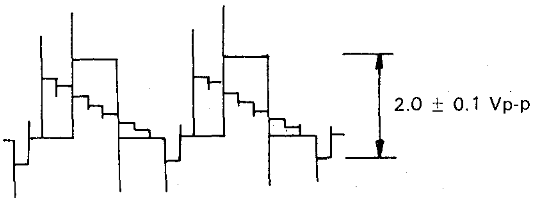


Fig. 15

3. Adjustment of EE level

1) Input the colour bar signal (of half-colour bar signal) of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (1V/div.; 20 μs/div.) to the video output jack.
3) Place the instrument in the "RECORD" mode.
4) Adjust EE level control (R236) so that the waveform of output jack is 2.0 ±0.1 Vp-p.

4. Adjustment of record chroma level

1) Apply the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Turn record luminance level control (R232) fully counterclockwise.
3) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP202.
4) Place the instrument in the "RECORD" mode.
5) Adjust record chroma level control (R231) to set the burst signal at the value as follows.

Mark on the cylinder	Adjusting value
⓪	30m Vp-p
①	35m Vp-p
②	40m Vp-p
③	40m Vp-p
④	45m Vp-p

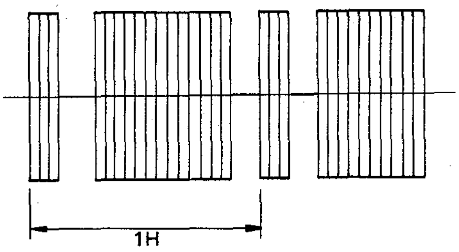


Fig. 16

5. Adjustment of record current balance

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP204.
3) Place the instrument in the "RECORD" mode.
4) Adjust record current balance control (R204) for the same value as "Record chroma level".

6. Adjustment of record luminance level

1) Apply the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP202.
3) Place the instrument in "RECORD"' mode.
4) Adjust record luminance level control (R232) to set the sync tip at 170m Vp-p.

NOTE: After performing this adjustment, take the following.

1. Insert a blank tape and record colour bar signal.
2. Play back the recorded colour bar signal.
3. Confirm that there are no crossbeats on TV screen.

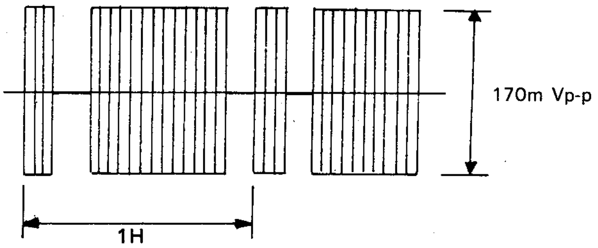


Fig. 17

7. Adjustment of peaking and damping

1) Insert a paper between the supply side end sensor and the lamp.
2) Place the instrument in the "PLAY" mode without the cassette tape inserted.
3) Connect a signal generator (SG) to TP203.
4) Connect CH-2 scope probe (0.02V/div.; 10 ms/div.) to TP205 and CH-1 scope probe to TP501.
5) Set the oscilloscope CH-1 (0.02V/div.; 10 ms/div.) to trigger mode.)
6) Input 1 MHz signal from the signal generator so that the waveform on the oscilloscope is as shown in Fig. 18 and the output level is approx. 0.05 Vp-p.

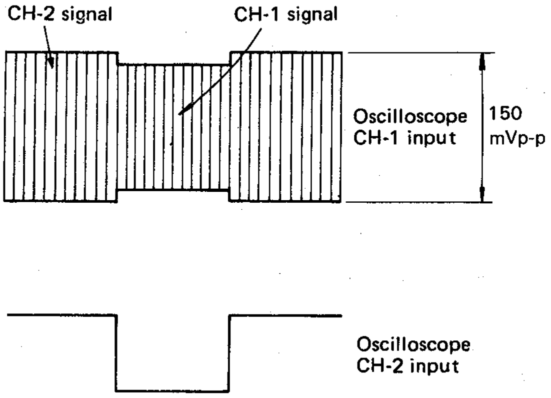


Fig. 18

Head CH-1 Peaking/Damping adjustment

Change over the SG signal to 4.4 MHz and adjust CH-1 peak control (C203) so that the signal (4.4 MHz) when the SW 25 Hz signal is "L" at max. amplitude.

Change over the signal generator to 1 MHz and adjust CH-1 damping control (R210) so that the amplitude of the 4.4 MHz signal is 5 times (14 dB) the amplitude of the 1 MHz signal.

Head CH-2 Peaking/Damping adjustment

In the same way as for CH-1 adjustment, adjust CH-2 peak control (C206) so that the 4.4 MHz signal is at max. amplitude when the SW 25 Hz signal is "H".

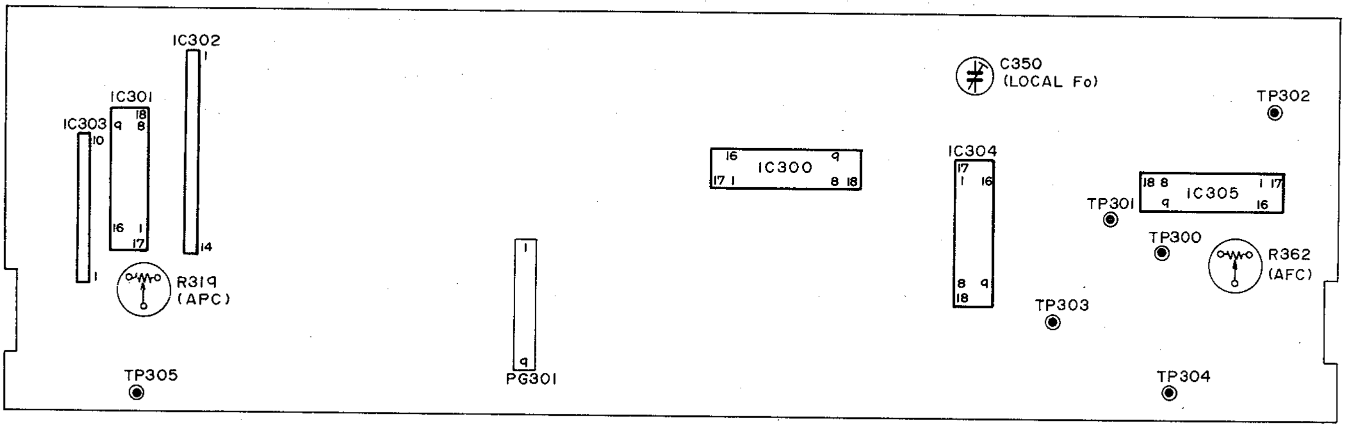
Adjust CH-2 damping control (R212) so that the amplitude of the 4.8 MHz signal is 5 times the amplitude of the 1 MHz signal.

NOTE: Be sure to remove the paper inserted between the supply side tape end sensor and the lamp.

8. Adjustment of playback level

1) Load a blank tape and record half-colour bar signal (or TV signal).
2) Connect a scope probe to the video output jack.
3) Playback the recorded part.
4) Adjust playback level control (R233) so that the waveform of video output jack is 2.0 ± 0.2 Vp-p.

ADJUSTMENT OF CHROMA CIRCUIT



CHROMA P.C.B (Parts side)

1. Adjustment of AFC F_0

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a frequency counter to TP301.
3) AC-ground TP300. (Connect a 47 μF/16V capacitor between TP300 and TP304.)
4) Place the instrument in the "RECORD" mode.
5) Adjust AFC F_0 control (R362) so that the frequency measured by the counterr is 15.625 kHz ± 100 Hz.
6) Remove the capacitor between TP300 and chassis ground.

2. Adjustment of APC F_0

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a frequency counter to TP302.
3) Place the instrument in the "RECORD" mode.
4) Adjust APC F_0 control (R319) so that the frequency measured by the counter is 4.435572 MHz ± 20 Hz.

3. Adjustment of local F_0

1) Connect a frequency counter to TP303.
2) Place the instrument in the "PLAY" mode.
3) Adjust local F_0 control (C350) so that the frequency measured by the counter is 4.433619 MHz ± 20 Hz.

NOTE: For connecting the counter to TP305, use a 10 : 1 probe. when a 1 : 1 probe, etc. is connected to TP305, high capacitance is added and a different frequency will be measured.

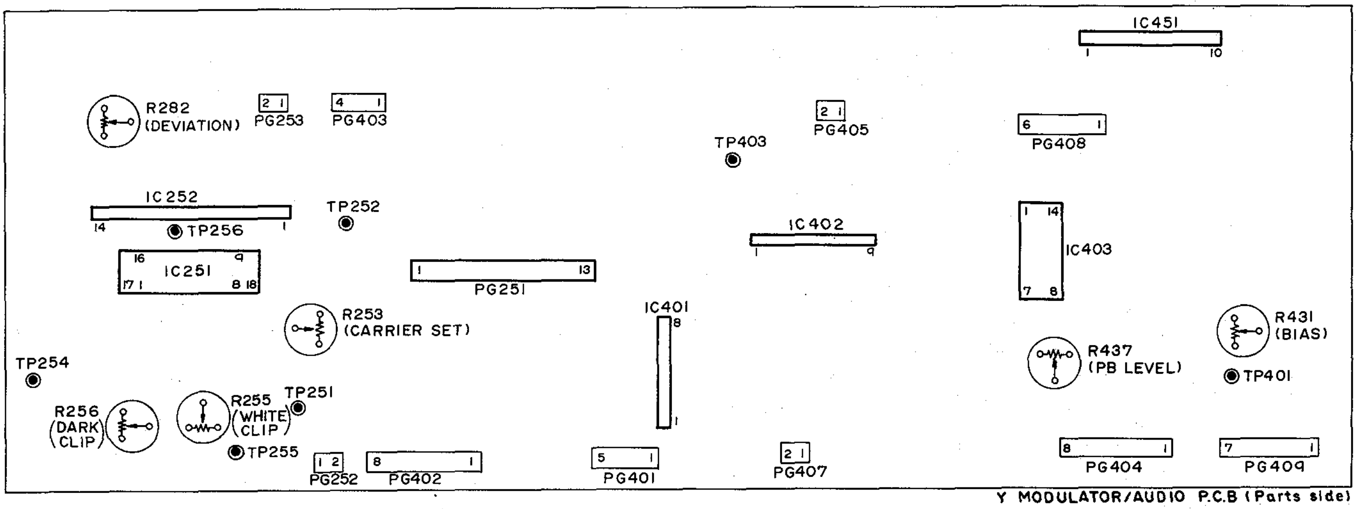
4. Confirmation of manual B/W changeover

1) Input half-colour bar signal into the video input jack.
2) Load a alignment tape and playback it.
3) Changeover switch SW251 to the "B/W" position.
4) Confirm that the colour component of the PB picture on the monitor screen died away.
5) Remove the alignment tape and load a blank tape to record half-colour bar signal.
6) Record half-colour bar signal for a few minutes.
7) Changeover SW251 to "AUTO" position and playback the recorded part.
8) Confirm that there is no colour component of the PB picture on the monitor screen.

5. Confirmation of SECAM system

1) Input SECAM colour bar signal.
2) Changeover SW251 to the center position.
3) Load a blank tape and record the SECAM signal.
4) Playback the recorded part.
5) Monitor the PB picture with a B-SECAM television set.
6) Confirm that there is no abnormality on the screen.

ADJUSTMENT OF AUDIO CIRCUIT


IC451
R282 (DEVIATION)
PG253
PG403
PG405
TP403
PG408
IC252
TP256
TP252
IC251
IC402
IC403
PG251
R253 (CARRIER SET)
IC401
R431 (BIAS)
R437 (PB LEVEL)
TP401
TP254
R256 (DARK CLIP)
R255 (WHITE CLIP)
TP251
TP255
PG252
PG402
PG401
PG407
PG404
PG409

Y MODULATOR/AUDIO P.C.B (Parts side)

1. Adjustment of bias level

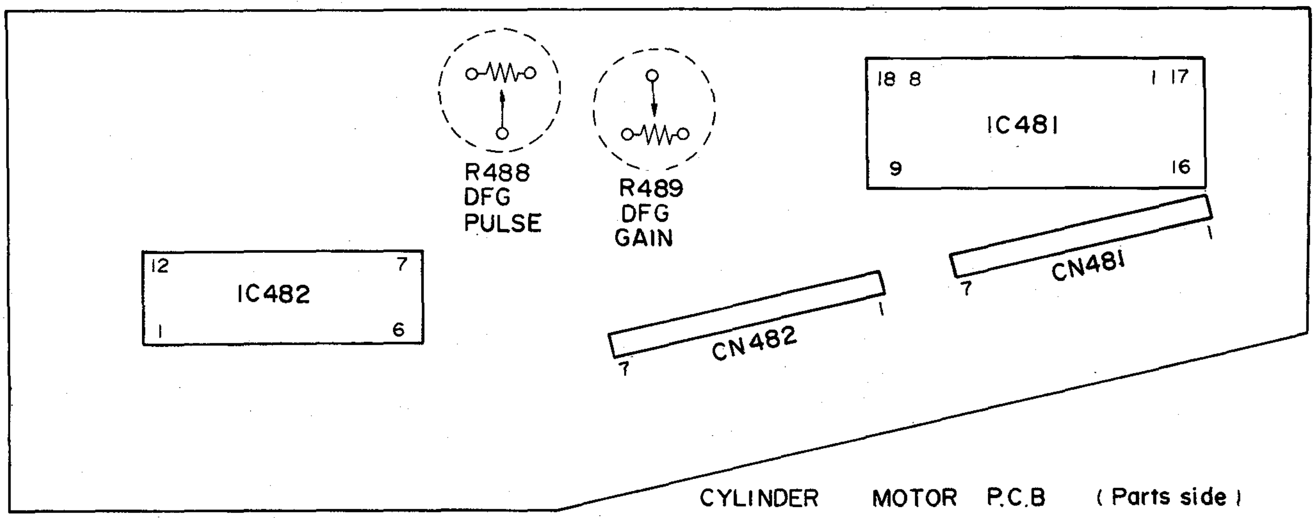
1) Input 1 kHz — 20 dBs signal to the audio input jack.
2) Connect a VTVM or a oscilloscope to TP (Audio head P.C.B.) and ground.
3) Load a blank tape and place the instrument in the "RECORD" mode.
4) Adjust bias level control (R431) for 1.20 mV RMS.

2. Adjustment of playback level

1) Connect a VTVM to Audio output jack.
2) Load an alignment tape and playback the sinewave signal (1 kHz tone).
3) Adjust playback level control (R437) for −6 dBs.

3. Adjustment of noise canceller

1) Connect a VTVM to the audio output jack.
2) Load a blank tape and place the instrument in the "PLAY" mode.
3) Adjust DFG GAIN control (R489) so that the output level is less than −42 dBs and minimum.
4) Adjust DFG PULSE control (R488) as in item 3.


R488 DFG PULSE
R489 DFG GAIN
IC481
IC482
CN481
CN482

CYLINDER MOTOR P.C.B (Parts side)

ADJUSTMENT TABLE OF P.C. BOARDS

The following table combines and briefly describes the electrical adjustment.
Refer to each electrical adjustment for details.

[**SERVO P.C.B.**]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
SYNC separator	R651 CN402	RECORD mode (Colour bar or TV broadcast)	Confirmation	8 Vp-p.
Reference oscilloator frequency	IC501 — 24	—	Confirmation	6.5 Vp-p 40.0 ms PB 47.6 ms REC
Capstan sample pulse	IC501 — 27	RECORD mode (Load a blank tape)	Confirmation	4.5 Vp-p.
Cylinder FG	TP525	RECORD mode (Load a blank tape)	R599	Ripple variation is minimum.
Frame advance speed	TP509	FRAME ADVANCE mode	R588	Sawtooth cycle is 27 ms.
Capstan speed	TP504	RECORD mode (Load a blank tape)	R679	Pulse stops as compared with trapezoid wave.
	TP504	RECORD mode (Load a blank tape)	Confirmation	Pulse stops at about the center of the rising slope of the trapezoidal wave.
PB capstan trapezoidal wave	TP504	PLAY mode (Alignment tape: playback the colour bar)	Confirmation	6.5 Vp-p 40.0m/sec. Center of the rise slope as the waveform.
Control pulse	IC501 — 4	RECORD mode (Colour bar or TV broadcast)	Confirmation	4.5 Vp-p 40 ms.
Cylinder speed	TP502	RECORD mode (Colour bar or TV broadcast)	R587	Pulse flows slowly (or stops if possible)
PB cylinder Servo	TP502	PLAY mode (Alignment tape: playback the colour bar)	Confirmation	Sample pulse is on the center of the fall slope of the trapezoidal wave.
Head switching pulse	TP501	RECORD mode (Load a blank tape)	Confirmation	8.5 Vp-p 40.0 ms.
Head switching point	Video output terminal	PLAY mode (Alignment terminal)	R586 Synchronizing slope of the oscilloscope to "—".	6.5H before the V.SYNC front porch.
	Video output terminal	PLAY mode (Alignment terminal)	R585 Synchronizing slope of the oscilloscope to "+".	6.5H before the V. SYNC front porch.
Record timing	Video output terminal	RECORD mode (Colour bar signal or TV signal)	R529	6.5H before the V. SYNC front porch.
Tracking preset	TP205	PLAY mode (Playback the recorded tape)	R593	Falling point of CH-1 agrees with that of CH-2.
NOISE phase	TP524	PLAY mode	R694	Negative pulse leads the negative edge of SW25 by 3.5 ± 0.1 ms.
VD phase	TV screen	STILL mode	R596	Flactuation is minimum.

[Connector P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
ODC	D607 (Red) D606 (Green)	STOP mode	R622	Brightness between D607 and D606 may be same.

[Y. Modulator P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Carrie set and deviation	TP252	RECORD mode (Video input: No signal)	R251	3.8 MHz ± 0.1 MHz.
	TP251	RECORD mode (Video input: Colour bar)	R282	0.88 Vp-p Between sync chip and white peak.
White clip and dark clip	TP251	RECORD mode (Video input: Colour bar)	R255	B = 75 ±5%.
	TP251	RECORD mode (Video input: Colour bar)	R256	C = 50 ±5%.

[Y. Demodulator P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
EE level	Video output terminal	RECORD mode (Video input: Colour bar)	R236	2.0 ±0.1 Vp-p.
REC chroma level	TP202	RECORD mode (Video input: Colour bar)	R231	0 → 30m Vp-p 1 → 35m Vp-p 2 → 40m Vp-p 3 → 40m Vp-p 4 → 45m Vp-p
REC current balance	TP204	RECORD mode (Video input: Colour bar)	R204	
REC luminance level	TP202	RECORD mode (Video input: Colour bar)	R232	170m Vp-p
CH-1 Peak and damp	TP205	PLAY mode	TP203 Oscillator (SG)	0.05 Vp-p (1 MHz).
	TP205	PLAY mode	C203	Max. (4.4 MHz) (When the 25 Hz Signal is "L").
	TP205	PLAY mode	R210	4.4 MHz is 5 times (+ 14 dB) the amplitude of 1 MHz.
CH-2 Peak and damp	TP205	PLAY mode	TP203 Oscillator (SG)	0.05 Vp-p (1 MHz).
	TP205	PLAY mode	C206	Max. (4.4 MHz) (When the 25 Hz Signal is "H").
	TP205	PLAY mode	R212	4.4 MHz is 5 times (+ 14 dB) the amplitude of 1 MHz.
PB level	Video output terminal	PLAY mode (Alignment tape: Colour bar)	R233	2.0 ±0.1 Vp-p.

[**CHROMA P.C.B.**]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
AFC F_0	TP301	RECORD mode [Connect a capacitor (47 μF/16V) between TP300 and TP304]	R362	Frequency counter 15.625 kHz ± 100 Hz.
APC F_0	TP302	RECORD mode (Video input: Colour bar)	R319	Frequency counter 4.435572 ± 20 Hz.
Local F_0	TP303	PLAY mode	C350	Frequency counter 4.433619 MHz ± 20 Hz.

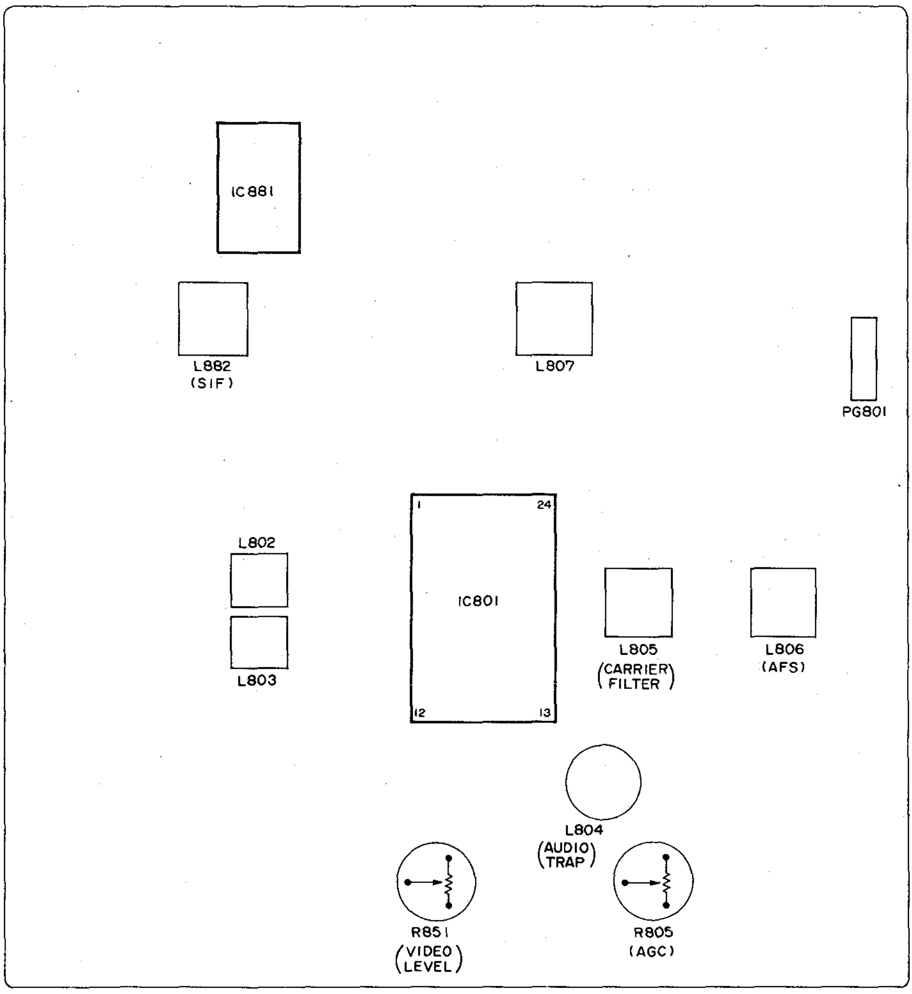
[**AUDIO P.C.B.**]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Bias level	TP492	RECORD mode (Load a blank tape)	R431	1.2 mVRMS
PB level	Audio output jack	PLAY mode (Alignment tape 1 kHz)	R437	−6 dBs.

[**DM P.C.B.**]

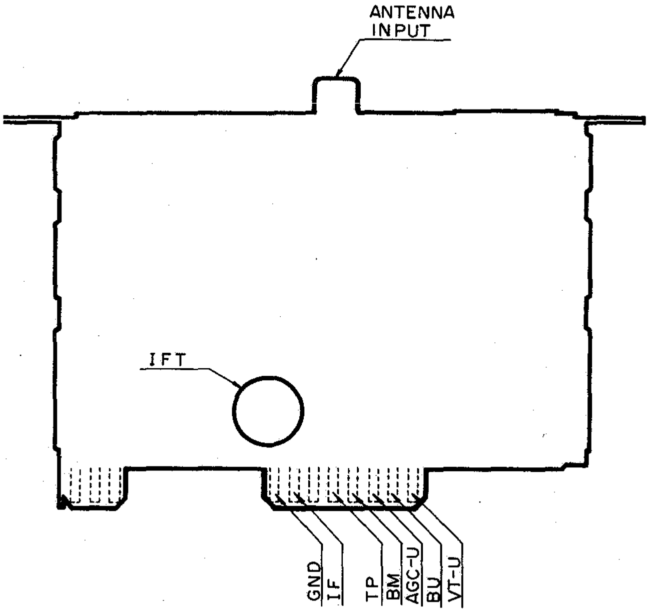
Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Noise canceller	Audio output jack	PLAY mode (Load a blank tape)	R489 R488	Minimum.

ADJUSTMENT OF TUNER/IF CIRCUIT

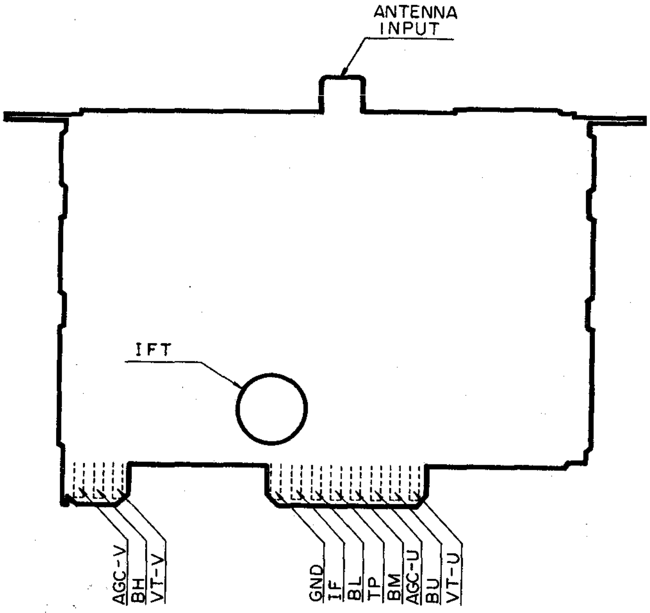

IC881
L882
(SIF)
L807
PG801
L802
L803
IC801
1
24
12
13
L805
(CARRIER FILTER)
L806
(AFS)
L804
(AUDIO TRAP)
R851
(VIDEO LEVEL)
R805
(AGC)

IF P.C.B (Parts side)

ET-546 (For the UK Model)


ANTENNA INPUT
IFT
GND
IF
TP
BM
AGC-U
BU
VT-U

ET-541 (Except for the UK model)


ANTENNA INPUT
IFT
AGC-V
BH
VT-V
GND
IF
BL
TP
BM
AGC-U
BU
VT-U

1. Adjustment of carrier filter and video amplitude

Positions to be adjusted: L805 (Carrier Filter) R851 (Video level).

Preparation

1) Input signal:
   Apply the following signals to the aerial input.
   a. White signal generator.
   b. RF modulator (75Ω output).
2) Connect the oscilloscope to IC801 — 24 (set to DC range).
3) Turn the operate switch on.
4) Signal level:
   −41 ± 10 dBm (converted to antenna input) 0 dBm = 1 mW.

Adjustment procedure

1) Turn the core of L805 (Carrier filter) clockwise so that it touches the P.C. Board surface.
2) Next, turn the core gradually counterclockwise to check that the normal detection waveform appears and the white section shown in Fig. 2-31 is larger than minimum. Turn the core clockwise from this position and stop it in the position just before the white section begins to gets larger. Adjustment precision: b/a (shown in Fig. 2-31 should be 0/+0.5, −0 dB.
3) Adjust R851 (video level) so that the p-p value of the video signal is 1.25 ± 0.05 Vp-p.

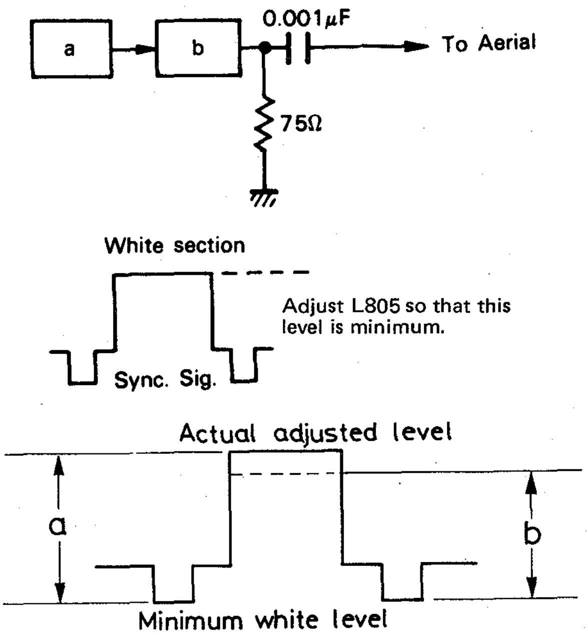

a
b
0.001μF
To Aerial
75Ω
White section
Adjust L805 so that this level is minimum.
Sync. Sig.
Actual adjusted level
a
b
Minimum white level

Fig. 2-31

2. Adjustment of audio trap

Position to be adjusted: L804 (Audio trap).

Preparation

1) Input signal:
   Apply the following signal to TP of ET-541. IF Sweeper.
2) Connect the oscilloscope to IC801 — 24.
3) AGC voltage:
   Connect pin 22 of IC801 to ground and apply 8.6/+1, −0V to pin 12 of IC801.
4) Connect a 50Ω resistor in parallel with L805 (between pins 18 and 19 of IC801).

Adjustment procedure

Adjustment L804 (Audio trap) so that points fs of the waveform at IC801 — 24 is minimum.

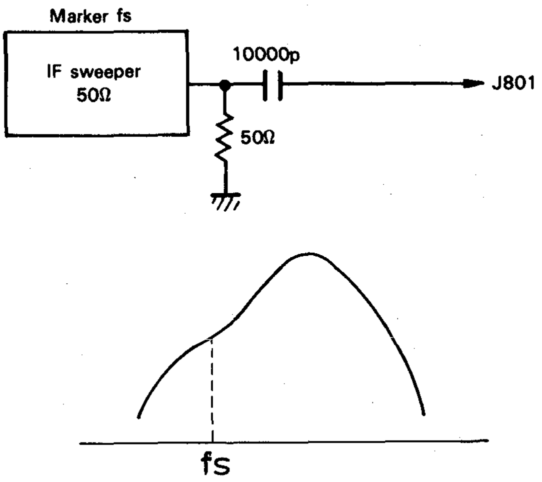

Marker fs
IF sweeper
50Ω
10000p
J801
50Ω
fs

Fig. 2-32

3. Adjustment of AFS (Automatic Fine Setting)

Position to be adjusted: L806 (AFS).

Preparation

1) Input signal:
   Apply the following signal to TP of ET-541 (ET-546).
2) Connect the voltmeter to terminal 16 of IC801.
3) AGC voltage:
   Connect pin 22 of IC801 to ground and apply 8.6V to pin 12.
4) Turn the operate switch on.
5) Adjust the output level of the signal generator so that the waveform at IC801 — 24 is 0.7 Vp-p at AM 40% modulation.

Adjustment procedure

Adjust L806 (AFS) so that the voltmeter may be 7.0 ± 1.0V with the fp signal.

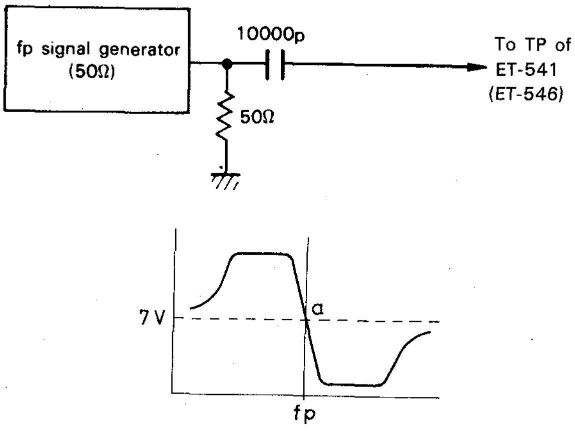


Fig. 2-33

4. Adjustment of SIF (Sound IF)

Position to be adjusted: L882 (SIF).

Preparation

1) Apply the AM reference signal to IC881 — 2.
   Setting the output of the AM standard signal generator.
   a. Carrier wave frequency
      6.0 MHz ±5 kHz (For the UK)
      5.5 MHz ± 5 kHz (Except for the UK)
   b. Modulation frequency
      400 Hz
   c. Modulation
      AM 30%
   d. Output level
      −75 dBm ~ −55 dBm
2) Connect pin 6 of IC881 to ground (It is not necessary to do this when pin 6 is grounded).
3) Connect the oscilloscope to terminal 4 of CN801.
4) Turn the operate switch on.

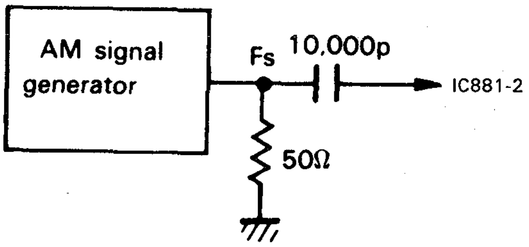


Fig. 2-34

Adjustment procedure

Adjust L882 (SIF) so that the signal amplitude is minimum.

5. Adjustment of PIF (Picture IF)

Position to be adjusted: IFT of ET-541 (ET-546)

Preparation

Sweeper method (Simple method):

1) The following voltage applied to the tuner.

Terminal Name	ET-541			ET-546
	voltage applied			voltage applied
	VHF		UHF	
	2~4CH	5~12CH		
AGC-V	5.6V	5.6V		
BH	—	12V	—	
VT-V	2 ~ 25V	2 ~ 25V		
GND	0V	0V	0V	0V
IF				
BL	12V	—	—	
TP				
BM	12V	12V	12V	12V
AGC-U	—	—	5.6V	5.6V
BU	—	—	12V	12V
VT-U	—	—	1.2 ~ 28V	1.2 ~ 28V

2) Voltage applied to the P.C. Board.

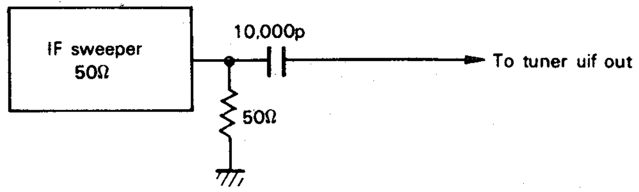
Position where voltage is to be applied	Voltage applied
+12V line	12V
IC801 22 pin	0V
IC801 12 pin	8.6 + 0.1V

3) Connect a 50Ω resistor in parallel with L805 (between pin 18 and 19 of IC801).
4) Connect the oscilloscope to TP801.

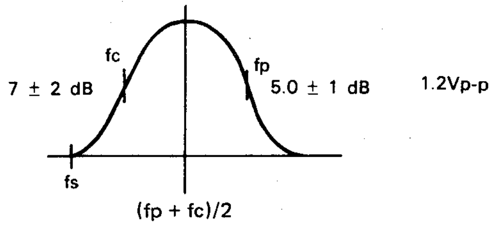
Adjustment procedure

Adjust the coil IFT so that the peak of the waveform is around the band's center and the maker level is within the following values.

ET-541	ET-546
1.2Vp-p fp = 38.9 MHz fc' = 34.47 MHz fs = 33.4 MHz	1.2Vp-p fp = 39.5 MHz fc' = 35.07 MHz fs = 33.5 MHz

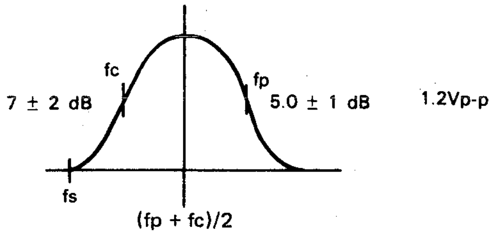

IF sweeper
50Ω
10,000p
To tuner uif out
50Ω

[For ET-546]



fp = 39.5 MHz
fc' = 35.07 MHz
fs = 33.5 MHz

[For ET-541]



fp = 38.9 MHz
fc' = 34.47 MHz
fs = 33.4 MHz

Fig. 2-35

6. Adjustment of AGC (Automatic Gain Control)

Position to be adjusted: R805 (AGC)

Preparation

1) Apply the RF signal to the aerial terminal Signal level: −49 dBm, (aerial input).
2) Connect the voltmeter to the AGC terminal of tuner. Use a voltmeter with an internal impedance of more than 100 kΩ.

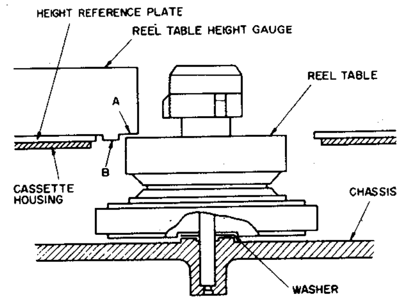
Adjustment procedure

Measure the voltage when there is no signal at the beginning. (Assume this voltage to be V1).
Next, input the signal and adjust R805 to obtain V1 +0.1/+0.1, −0.05V (with AFS ON).
Since this adjustment is affected by the circuit's temperature drift perform a heat-run for more than 2 minutes in the signal reception mode.

MECHANICAL ADJUSTMENT

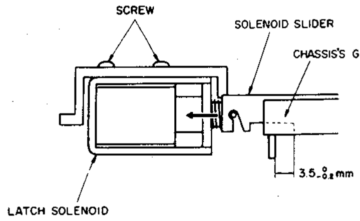
1. Reel Table Height

The height of the supply and take-up reel tables should be the same, with ±0.2mm tolerance. Reel table heights are adjusted by changing the number of washers under each table — See "Disassembly".
Check the heights of reel tables by installing the Height Reference Plate and the Reel Table Height Gauge as shown in Figure and adjust so that the reel tables comes between A and B.
Two sizes of washers are available; 0.25mm and 0.5mm. These should be used in combination to achieve the same reference height for both reel tables.

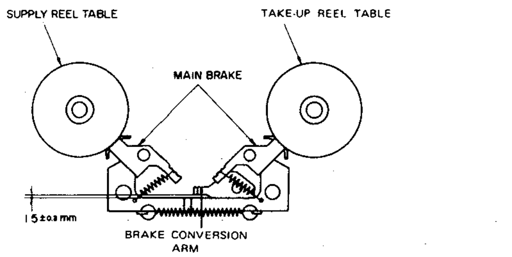

HEIGHT REFERENCE PLATE
REEL TABLE HEIGHT GAUGE
REEL TABLE
A
B
CASSETTE HOUSING
CHASSIS
WASHER

2. Latch Solenoid Position

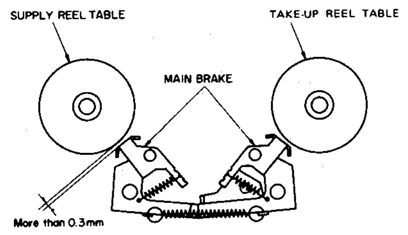
1) Adjust two (2) screws holding the latch solenoid so that the clearance between the solenoid slider and the chassis guide groove is $3.5^{\ 0}_{-0.2}$mm when the latch solenoid is ON (the plunger moves in the direction of the arrow).


SCREW
SOLENOID SLIDER
CHASSIS'S GUIDE
LATCH SOLENOID
3.5-0/0.2mm

2) Check that the clearance between the brake conversion arm and the main brake arm is 1.5 ±0.3mm at the time when the main brake is compressed against the supply and take-up reel tables.

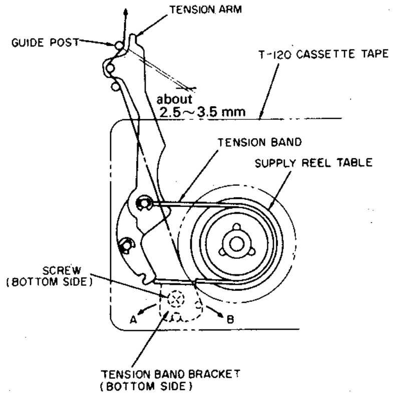

SUPPLY REEL TABLE
TAKE-UP REEL TABLE
MAIN BRAKE
1.5±0.3mm
BRAKE CONVERSION ARM

3) Check that the clearance between the main brake and the supply and take-up reel tables is more than 0.3mm when the latch solenoid is OFF (when the plunger moves in the opposite direction to the arrow).


SUPPLY REEL TABLE
TAKE-UP REEL TABLE
MAIN BRAKE
More than 0.3mm

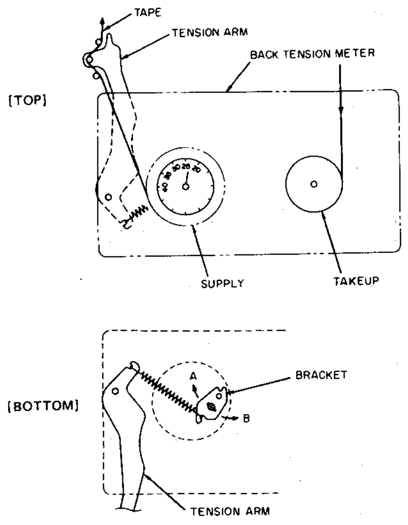
3. Tension pole position

1) Insert cassette tape T120 and completely rewind th tape before setting to the PLAY mode.
2) Move the tension band bracket in directions A and B t adjust so that the clearance between the tension ar and guide post is 2.5 ~ 3.5mm after loading complete.
3) Check back-tension after adjustment is complete.


TENSION ARM
GUIDE POST
T-120 CASSETTE TAPE
about 2.5~3.5 mm
TENSION BAND
SUPPLY REEL TABLE
SCREW (BOTTOM SIDE)
A
B
TENSION BAND BRACKET (BOTTOM SIDE)

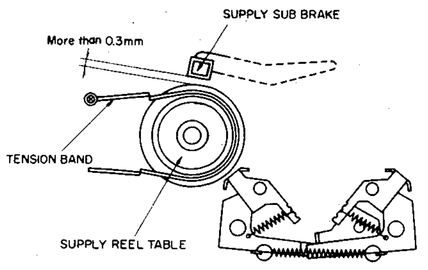
4. Checking the back-tension

1) Set the back-tension meter.
2) Check that the back-tension is 24 ~ 32gr•cm.
3) When the back-tension is not 24 ~ 32gr/cm, move th bracket which fixes the back-tension spring in directio A or B to adjust it.


TAPE
TENSION ARM
BACK TENSION METER
[TOP]
SUPPLY
TAKEUP
[BOTTOM]
A
B
BRACKET
TENSION ARM

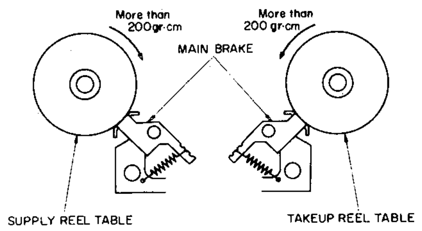
5. Checking the supply sub. brake position

Check that the clearance between the supply reel table and the supply sub. brake is more than 0.3mm in PLAY, REC, REW modes.


SUPPLY SUB BRAKE
More than 0.3mm
TENSION BAND
SUPPLY REEL TABLE

6. Main brake torque

1) Apply the torque gauge to the supply/take-up reel tables in the STOP mode, turn them in the direction of the arrows to check that the torque is more than 200gr·cm.


More than 200gr·cm
More than 200 gr·cm
MAIN BRAKE
SUPPLY REEL TABLE
TAKEUP REEL TABLE

7. Slack removal torque

Press the STOP button in the PLAY mode to enter the UNLOADING mode. Check that the torque gauge applied to the supply reel table shows 100 ~ 200gr·cm at that time.

NOTE: 100 ~ 200gr·cm is a reference value.

8. Rewind torque

Set to the REWIND mode. Check that the torque gauge applied to the supply reel table shows more than 250gr·cm.

NOTE: 250gr·cm is a reference value.

9. Take-up torque

Set to the PLAY mode. Check that the torque gauge applied to the take-up reel table shows 100 ~ 200gr·cm.

NOTE: 100 ~ 200gr·cm is a reference value.

10. Fast-forward torque

Set to "F. Forward" mode. Check that the torque gauge applied to the take-up reel table shows more than 250gr·cm.

NOTE: 250gr·cm is a reference value.

11. Supply reel table back-tension

Set to the "F. Forward" mode. Check that the torque gauge applied to the supply reel table shows 4 ~ 15gr·cm.

NOTE: 4 ~ 15gr·cm is a reference value.

12. Take-up reel table back-tension

Set to the REW mode. Check that the torque gauge applied to the take-up reel table shows 4 ~ 15 gr·cm.

NOTE: 4 ~ 15gr·cm is a reference value.

13. Take-up reel table back-tension in Loading, Unloading, Rec/Pause modes

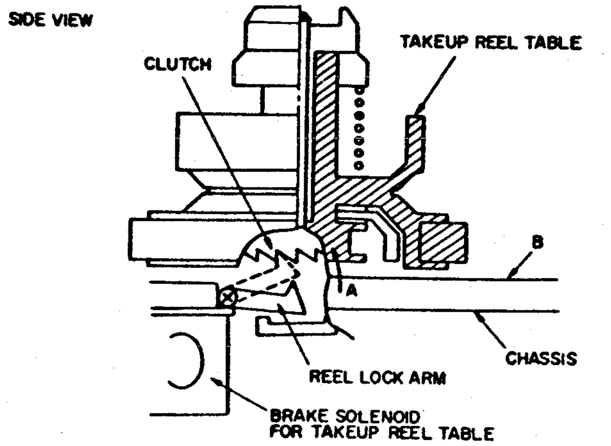
Check that the torque gauge applied to the take-up reel table shows 200 ~ 370gr·cm in the above modes.

NOTE: 200~370gr·cm is a reference value.

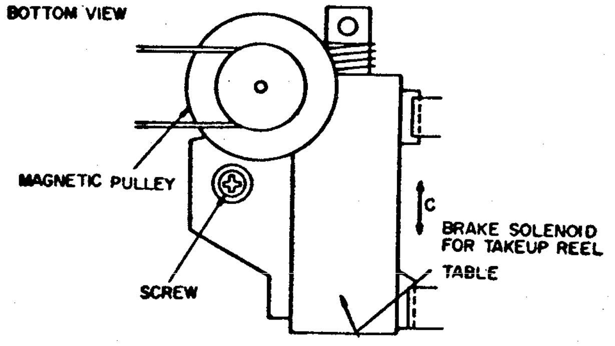
14. Reel Lock Arm Adjustment

Loosen the screw holding the reel lock arm. Move the arm until it engages the take-up clutch assembly with brake solenoid disengaged.

SIDE VIEW

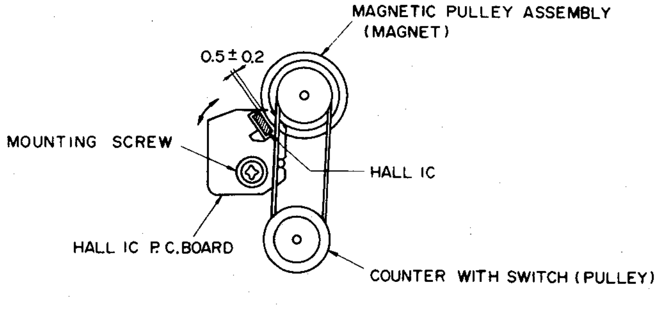

CLUTCH
TAKEUP REEL TABLE
A
B
CHASSIS
REEL LOCK ARM
BRAKE SOLENOID FOR TAKEUP REEL TABLE

BOTTOM VIEW


MAGNETIC PULLEY
SCREW
C
BRAKE SOLENOID FOR TAKEUP REEL TABLE

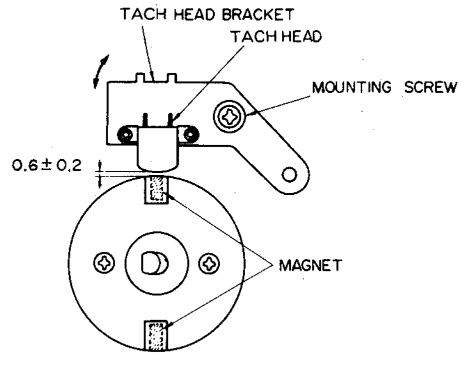
15. Adjusting the position of the take-up reel table stop detector Hall IC

Loosen the fixing screw to adjust in the direction of the arrow so that the clearance between the Hall IC and magnetic pulley assembly is 0.5 ±0.2mm.


MAGNETIC PULLEY ASSEMBLY (MAGNET)
0.5±0.2
MOUNTING SCREW
HALL IC
HALL IC P.C.BOARD
COUNTER WITH SWITCH (PULLEY)

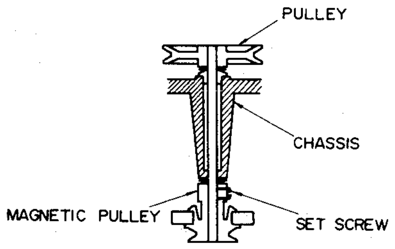
16. Adjusting the DD cylinder Tach head

Loosen the screw to adjust in the direction of the arrow so that the clearance between the Tach head and the magnet plate is 0.6 ±0.2mm (adjust 2 magnets).


TACH HEAD BRACKET
TACH HEAD
MOUNTING SCREW
0.6±0.2
MAGNET

17. Adjusting the counter pulley

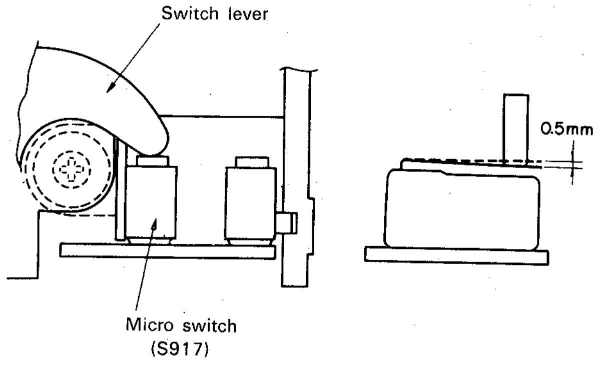
Adjust the setscrew so that clearance in the thrust direction is 0.2 ~ 0.4mm. (Use a hexagonal wrench.)


PULLEY
CHASSIS
MAGNETIC PULLEY
SET SCREW

18. Adjusting the Loading/Unloading Switch

Loosen screw holding small PC board (located under loading motor). Both switches (S916—loading, S917—unloading) are mounted on this PC board. As loading starts S916 closes and S917 is open. As loading is completed S916 opens and S917 closes.

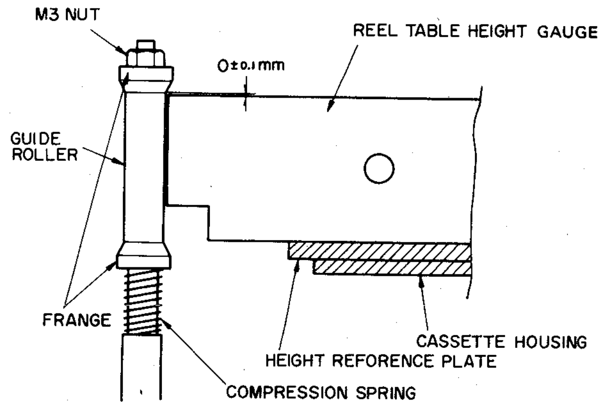
Turn the worm gear in the loading direction and confirm that the loading switch (S916) is actuated. Tighten screw.


Switch lever
0.5mm
Micro switch (S917)

19. Adjusting the guide roller (Guide pin)

Install the height reference plate and place the reel table height jig onto it. Adjust the nut so that the clearance is 0 ±0.1.

NOTE: Electrical adjustment is required after mechanical adjustment is complete.

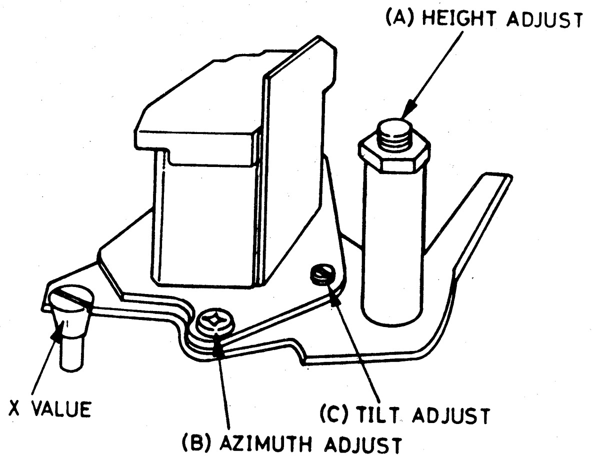

M3 NUT
REEL TABLE HEIGHT GAUGE
0±0.1mm
GUIDE ROLLER
FRANGE
CASSETTE HOUSING
HEIGHT REFORENCE PLATE
COMPRESSION SPRING

20. Audio and control head position

1) Connect CH-1 scope probe to TP205 on the Y Demodulator board.
2) Set tracking knob to detent (fixed) position.
3) Playback monoscope signal on test tape.
4) Loosen the A/C head base plate nut "A".
5) Carefully move the A/C head base plate in either direction for maximum head FM envelope output.

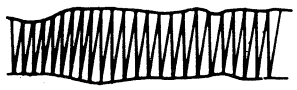
21. Audio/control head height and azimuth adjustments

1) Connect CH-1 scope probe to audio output jack on the rear of instrument.
2) Playback a 6KHz (monoscope) audio signal on test tape.
3) Adjust azimuth screw "B" for maximum output.
4) Playback a 1KHz (multiburst) audio signal on test tape.
5) Adjust tilt adjust screws "C" for maximum output.
6) Repeat steps 3 and 6 for maximum 6KHz and 1KHz output.



22. Tape travel

1. General check items

Item	Assessment	Tools & meters
Back-tension value	24～32g/cm (with set horizontal)	Back-tension cassette
Tension pole position	a. Chassis groove b. Tension pole	Check by eye
Supply guide pin Take-up guide pin	Tape slides along lower Flange without curling or crease	Check by eye
Inclined guide Guide roller	No conspicuous curl or crease No adherence of dust to tape	Check by eye
Tape	No conspicuous distortion variation of tape	Check by eye
Impedance roller	Roller should rotate smoothly	Check by eye
Envelope	No conspicuous fluctuation No conspicuous deformation	Alignment cassette Oscilloscope (TP308 CN501 ① pin
Flatness	○ It is desired that max envelope/min. envelope ratio is more than 60% (worst position in tracking adjustment range)	Envelope waveform
Fluctuation	○ Variation width of envelope is desired to be less than 29%	
X value	○ Envelope is at max. or at a value more than 80% of max. value at the tracking knob click position	

2. Adjustment

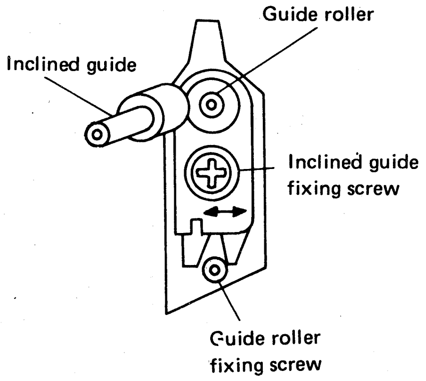
Mainly adjust the sections shown below when re-installing or replacing parts or when there is any problem in the checks specified in item 2.

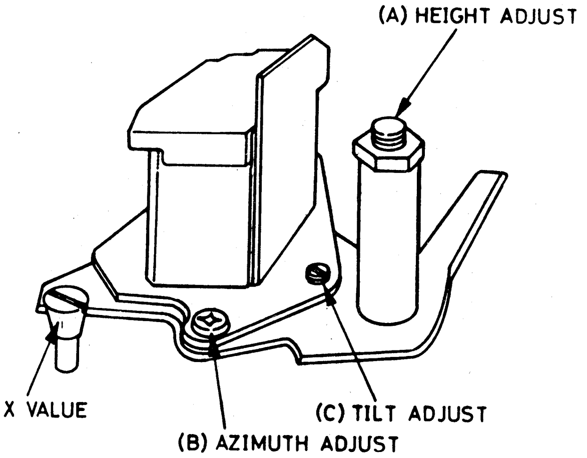
a. When replacing the head cylinder ass'y	Judgement	Jigs and Tools
○ Guide roller height ○ Inclined guide oscillation angle	○ No crease, curl of tape ○ Check flatness of envelope fluctuation ○ Check X value	○ Hexagonal wrench ○ + screwdrives ○ – screwdrives

b. When replacing the A/C head ass'y	Judgement	Jigs and Tools
○ A/C head height ○ A/C head azimuth ○ A/C head tilt	○ Audio or control track width ○ Audio playback level maximum ○ No slack at top/bottom tape No conspicuous fluctuation of audio level (Less than 2dB)	○ Level meter ○ Alignment cassette ○ Oscilloscope ○ + screwdriver ○ – screwdriver ○ Hexagonal wrench

c. When replacing guide roller & inclined guide (Same as in a).

d. When replacing guide post	Judgement	Jigs and Tools
○ Height of the replacement guide section	○ No crease, curl of tape ○ No envelope fluctuation	○ Box screwdriver ○ Oscilloscope

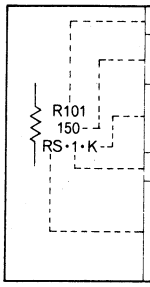

Guide roller
Inclined guide
Inclined guide fixing screw
Guide roller fixing screw


(A) HEIGHT ADJUST
X VALUE
(C) TILT ADJUST
(B) AZIMUTH ADJUST

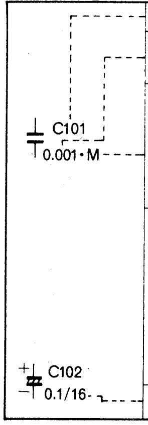
DIAGRAMS

Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
   (   ) are shown in recording condition.
2. Nomenclature of Resistors and Capacitors.



Circuit No.	
Value	No indicated Ω(Ohm) M : 1000kΩ
Tolerance	No indicated ±5% K : ±10% M : ±20%
Wattage	No indicated ¼W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film



Circuit No.		
Value	No indicated μF P : PF	
Tolerance	No indicated ±10% J : ± 5% M : ±20% Z : +80%, −20% D : ±0.5pF C : ±0.25pF	
Sort		Ceramic
	+	Electrolytic
	M	Mylar
	P	Polyester
	S	Styrol
Voltage	No indicated 50WV	

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with *, use specified ones stated on parts list since required temperature characteristics.

Cautions on use of MOS IC

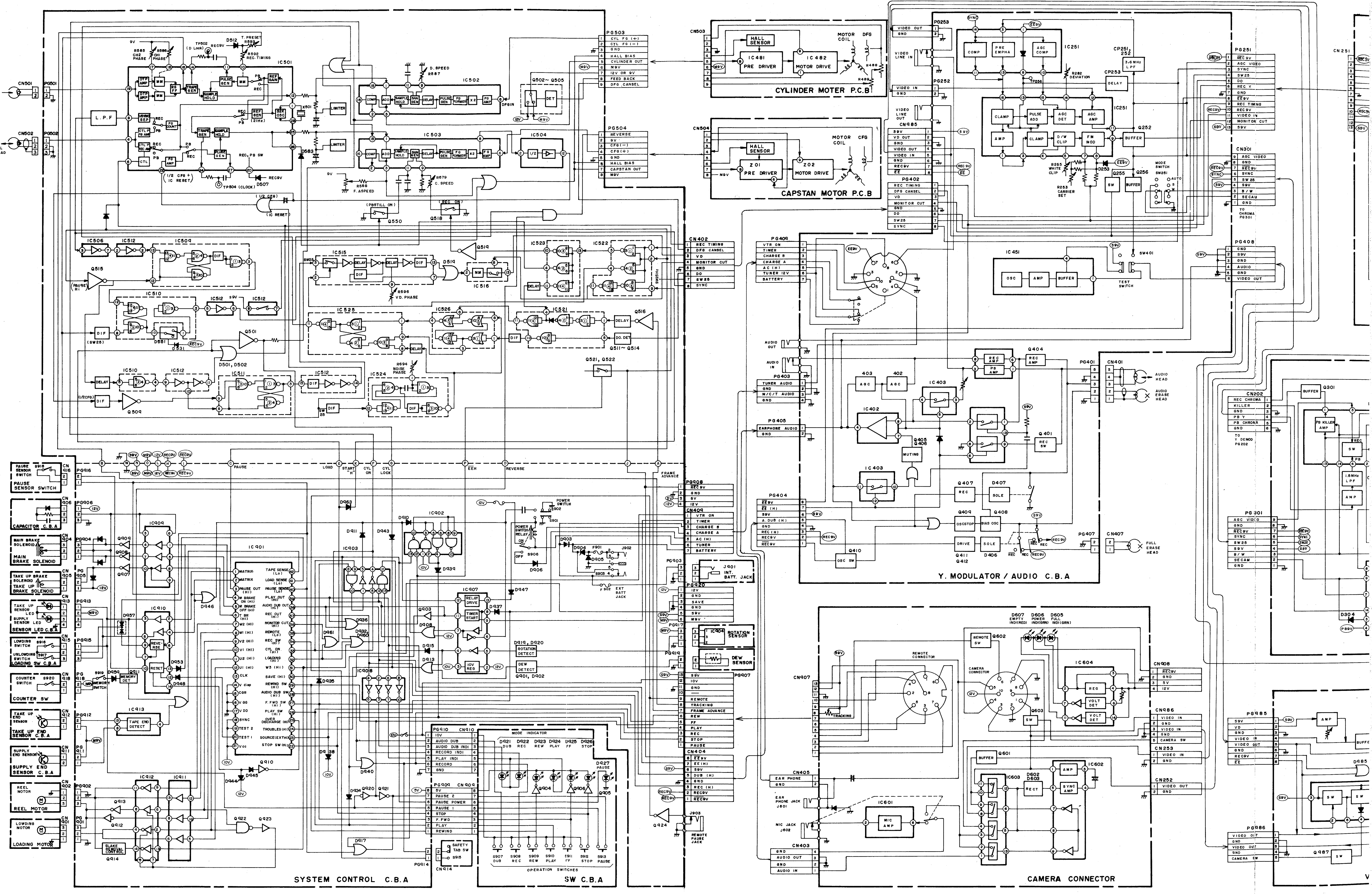
1. The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
2. High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
3. The human body, clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so a workers should be grounded.
4. Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

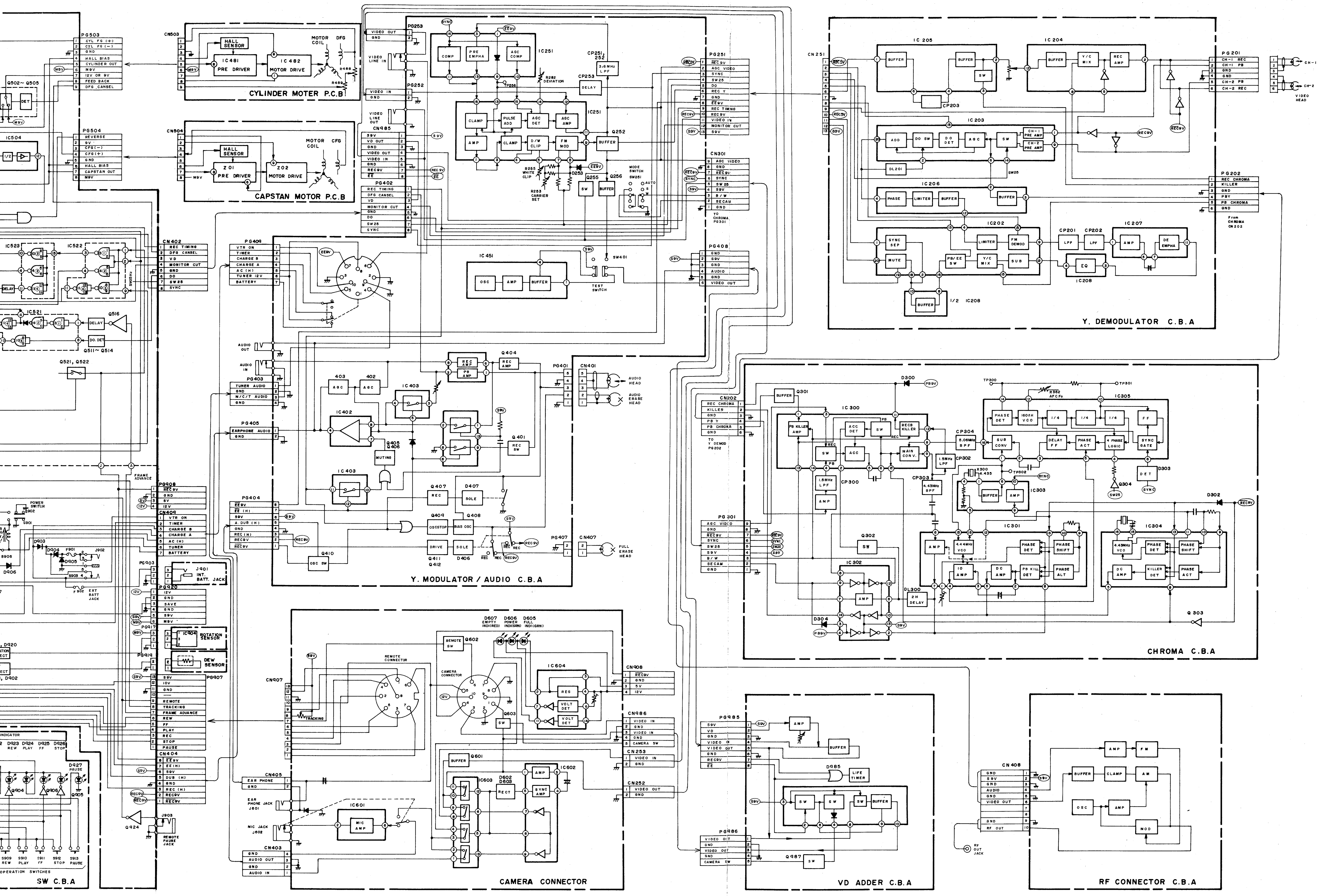
SAFETY PRECUATION

The following precautions should be observed when servicing.

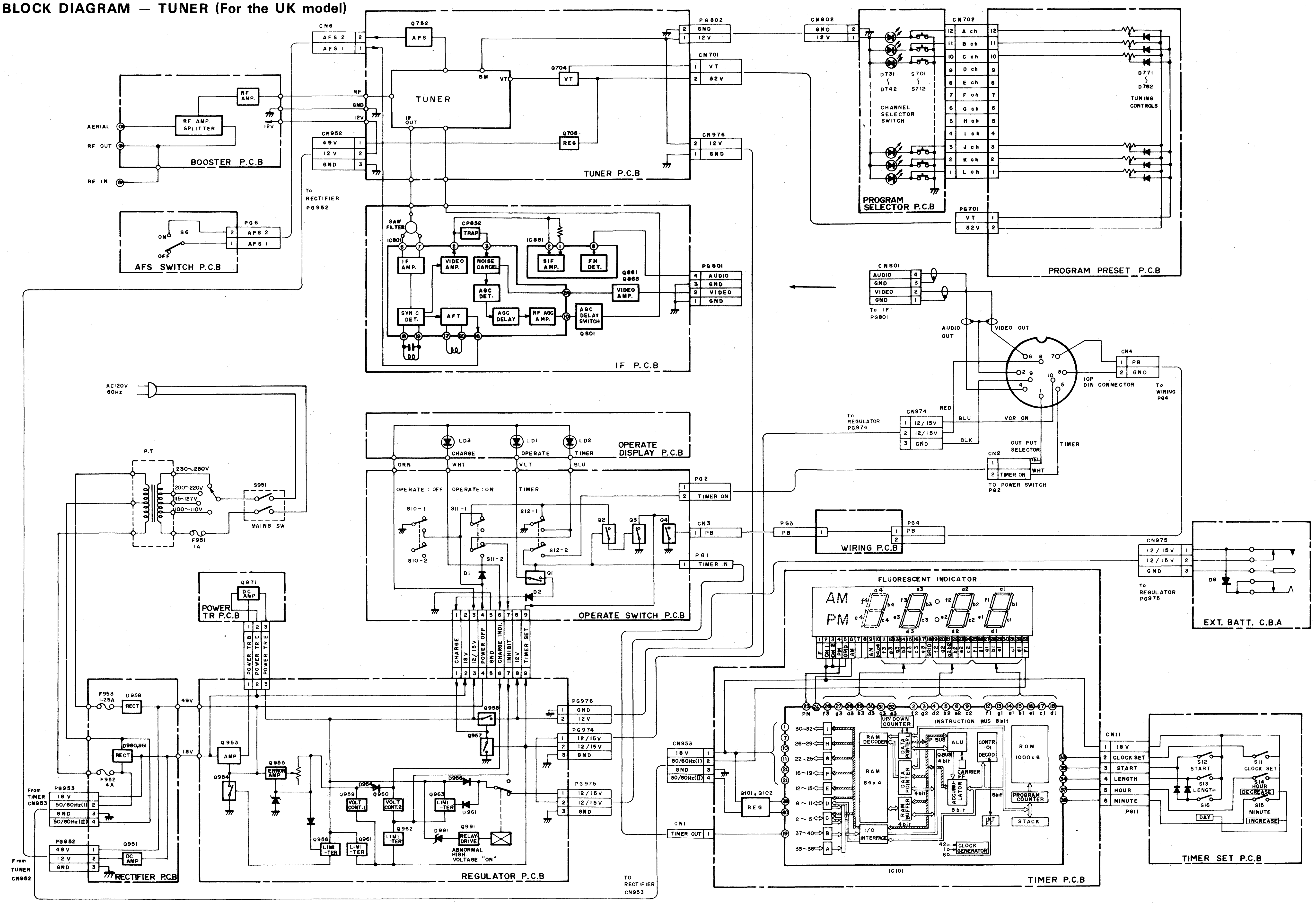
1. Since many parts in the unit have special safety related characteristics, always use genuine replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers.
   Critical parts are marked with ⚠ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

OVERALL BLOCK DIAGRAM — DECK

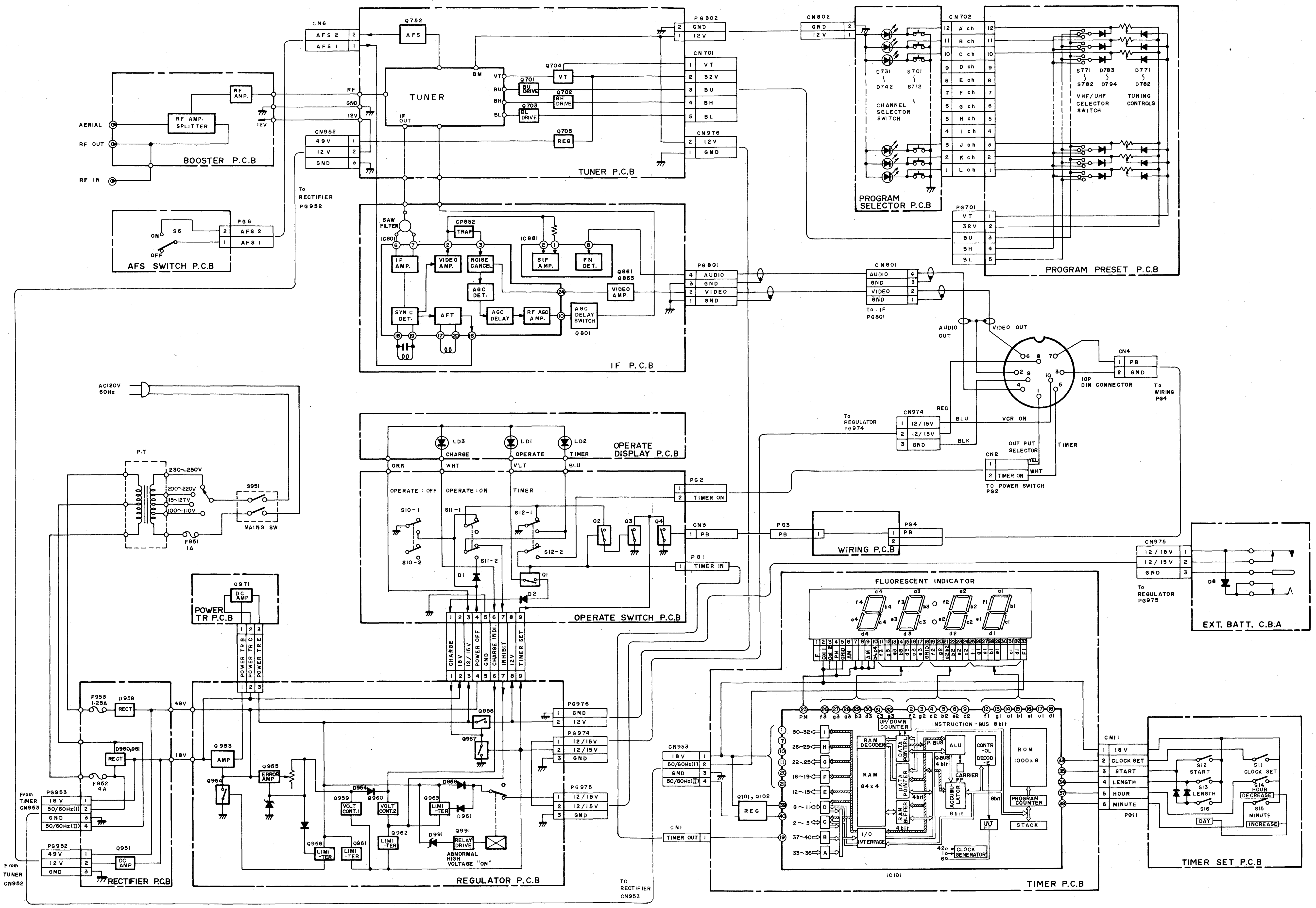

SYSTEM CONTROL C.B.A
SW C.B.A
CYLINDER MOTER P.C.B
CAPSTAN MOTOR P.C.B
Y. MODULATOR / AUDIO C.B.A
CAMERA CONNECTOR
CAPACITOR C.B.A
MAIN BRAKE SOLENOID
TAKE UP BRAKE SOLENOID
SENSOR LED C.B.A
LOADING SW C.B.A
COUNTER SW
TAKE UP END SENSOR C.B.A
SUPPLY END SENSOR C.B.A
REEL MOTOR
LOADING MOTOR
PAUSE SENSOR SWITCH
DTP HEAD
CTL HEAD
IC501
IC502
IC503
IC504
IC901
IC902
IC907
IC908
IC909
IC910
IC911
IC912
IC913
IC251
IC451
IC402
IC403
IC601
IC602
IC603
IC604
IC481
IC482
HALL SENSOR
PRE DRIVER
MOTOR DRIVE
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
OPERATION SWITCHES
MODE INDICATOR
ROTATION SENSOR
DEW SENSOR
REMOTE PAUSE JACK
EAR PHONE JACK J601
MIC JACK J602
REMOTE CONNECTOR
TEST SWITCH
MODE SWITCH SW251


CYLINDER MOTER P.C.B
CAPSTAN MOTOR P.C.B
PRE DRIVER
MOTOR DRIVE
HALL SENSOR
IC481
IC482
Z01
Z02
MOTOR COIL
DFG
CFG
PG503
PG504
CN503
CN504
Q502~Q505
IC504
IC521
IC522
IC523
Q511~Q514
Q516
Q521, Q522
CN402
PG409
PG403
PG405
PG404
PG408
PG401
PG407
CN401
CN407
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
IC251
IC403
IC402
IC451
OSC
AMP
BUFFER
TEST SWITCH
MODE SWITCH SW251
SW401
Q252
Q255
Q256
Q401
Q404
Q407
Q408
Q409
Q410
Q411
Q412
D406
D407
REC AMP
PB AMP
MUTING
SOLE
BIAS OSC
OSCSTOP
DRIVE
COMP
PRE EMPHA
AGC COMP
CLAMP
PULSE ADD
AGC DET
AGC AMP
D/W CLIP
FM MOD
DELAY
3.58MHz LPF
R253 CARRIER SET
R255 WHITE CLIP
R282 DEVIATION
Y. MODULATOR / AUDIO C.B.A
CN251
PG251
CN301
TO CHROMA PG301
IC205
IC204
IC203
IC206
IC202
IC207
IC208
Y/C MIX
REC AMP
ADD
DO SW
DO DET
AGC
SW
CH-1 PRE AMP
CH-2 PRE AMP
PHASE
LIMITER
SYNC SEP
MUTE
PB/EE SW
SUB
FM DEMOD
LPF
DE EMPHA
EQ
CP201
CP202
CP203
DL201
PG201
PG202
CH-1
CH-2
VIDEO HEAD
From CHROMA CN202
Y. DEMODULATOR C.B.A
CN202
TO Y DEMOD PG202
PG301
IC300
IC301
IC302
IC303
IC304
IC305
Q301
Q302
Q303
Q304
D300
D302
D304
TP300
TP301
TP302
X300 4.435
CP300
CP302
CP303
CP304
DL300
PB KILLER AMP
ACC DET
ACC
RECB KILLER
MAIN CONV.
SUB CONV
PHASE DET
160fH VCO
1/4
FF
DELAY FF
PHASE ACT
4 PHASE LOGIC
SYNC GATE
DET
4.43MHz VCO
PHASE SHIFT
10 AMP
DC AMP
PB KILL DET
PHASE ALT
KILLER DET
2H DELAY
1.5MHz LPF
4.43MHz BPF
5.06MHz BPF
AFC fo
CHROMA C.B.A
PG985
PG986
DQ85
Q987
LIFE TIMER
VD ADDER C.B.A
CN408
AM
MOD
RF OUT JACK
RF CONNECTOR C.B.A
CN907
CN908
CN986
CN253
CN252
CN405
CN403
IC601
IC602
IC603
IC604
Q601
Q602
Q603
D602 D603
D605 FULL INDI(GRN)
D606 POWER INDI(GRN)
D607 EMPTY INDI(RED)
REMOTE CONNECTOR
CAMERA CONNECTOR
REMOTE SW
MIC AMP
SYNC AMP
RECT
REG
VOLT DET
EAR PHONE JACK J601
MIC JACK J602
CAMERA CONNECTOR
PG908
PG920
PG917
PG919
PG907
PG903
CN409
CN404
J901 INT. BATT. JACK
J902 EXT BATT JACK
J903 REMOTE PAUSE JACK
IC904 ROTATION SENSOR
DEW SENSOR
POWER SWITCH
FRAME ADVANCE
S901
S902
S906
D903
D904
D905
D906
F901
F902
S903
Q924
D923 REW
D924 PLAY
D925 FF
D926 STOP
D927 PAUSE
Q904
Q905
Q906
S909 REW
S910 PLAY
S911 FF
S912 STOP
S913 PAUSE
OPERATION SWITCHES
SW C.B.A

OVERALL BLOCK DIAGRAM — TUNER (For the UK model)


BOOSTER P.C.B
RF AMP.
RF AMP. SPLITTER
AERIAL
RF OUT
RF IN
AFS SWITCH P.C.B
S6
ON
OFF
PG6
AFS 2
AFS 1
CN6
Q752
AFS
TUNER
TUNER P.C.B
Q704
VT
Q705
REG
BM
IF OUT
RF
GND
12V
CN952
49V
To RECTIFIER PG952
PG802
CN701
32V
CN976
IF P.C.B
SAW FILTER
IC801
IF AMP.
VIDEO AMP.
CP852
TRAP
NOISE CANCEL
AGC DET.
SYNC DET.
AFT
AGC DELAY
RF AGC AMP.
AGC DELAY SWITCH
Q801
IC881
SIF AMP.
FM DET.
Q861 Q863
PG801
AUDIO
VIDEO
CN802
CN702
A ch
B ch
C ch
D ch
E ch
F ch
G ch
H ch
I ch
J ch
K ch
L ch
D731 ~ D742
S701 ~ S712
CHANNEL SELECTOR SWITCH
PROGRAM SELECTOR P.C.B
D771 ~ D782
TUNING CONTROLS
PG701
PROGRAM PRESET P.C.B
CN801
To IF PG801
AUDIO OUT
VIDEO OUT
CN4
PB
10P DIN CONNECTOR
To WIRING PG4
To REGULATOR PG974
CN974
12/15V
RED
BLU
BLK
VCR ON
OUT PUT SELECTOR
TIMER
CN2
YEL
WHT
TIMER ON
TO POWER SWITCH PG2
AC120V 60Hz
P.T
230~250V
200~220V
115~127V
100~110V
S951
MAINS SW
F951 1A
OPERATE DISPLAY P.C.B
LD3 CHARGE
LD1 OPERATE
LD2 TIMER
ORN
WHT
VLT
BLU
OPERATE : OFF
OPERATE : ON
TIMER
S10-1
S10-2
S11-1
S11-2
S12-1
S12-2
Q1
Q2
Q3
Q4
D1
D2
PG2
CN3
PG1
TIMER IN
OPERATE SWITCH P.C.B
PG3
PG4
WIRING P.C.B
CN975
To REGULATOR PG975
D8
EXT. BATT. C.B.A
POWER TR P.C.B
Q971
DC AMP
POWER TR B
POWER TR C
POWER TR E
CHARGE
18V
12/15V
POWER OFF
GND
CHARGE INDI.
INHIBIT
TIMER SET
F953 1.25A
D958
RECT
D960,951
F952 4A
From TIMER CN953
PG953
50/60Hz(I)
50/60Hz(II)
From TUNER CN952
PG952
Q951
RECTIFIER P.C.B
Q953
AMP
Q954
Q955
ERROR AMP
Q956
LIMITER
Q959
VOLT CONT.1
D954
Q960
VOLT CONT.2
Q961
Q962
Q963
D956
D961
D991
Q991
RELAY DRIVE
ABNORMAL HIGH VOLTAGE "ON"
Q958
Q957
PG976
PG974
PG975
REGULATOR P.C.B
To RECTIFIER CN953
FLUORESCENT INDICATOR
AM
PM
CN953
Q101, Q102
REG
CN1
TIMER OUT
UP/DOWN COUNTER
INSTRUCTION-BUS 8bit
RAM DECODER
DATA POINTER
P. BUS
ALU
CONTROL DECOD
ROM 1000×8
RAM 64×4
DATA POINTER
RAM BUFFER
CARRIER FF
ACCUMULATOR
PROGRAM COUNTER
STACK
INT FF
I/O INTERFACE
CLOCK GENERATOR
IC101
TIMER P.C.B
CN11
CLOCK SET
START
LENGTH
HOUR
MINUTE
PG11
S11 CLOCK SET
S12 START
S13 LENGTH
S14 HOUR DECREASE
S15 MINUTE INCREASE
S16 DAY
TIMER SET P.C.B

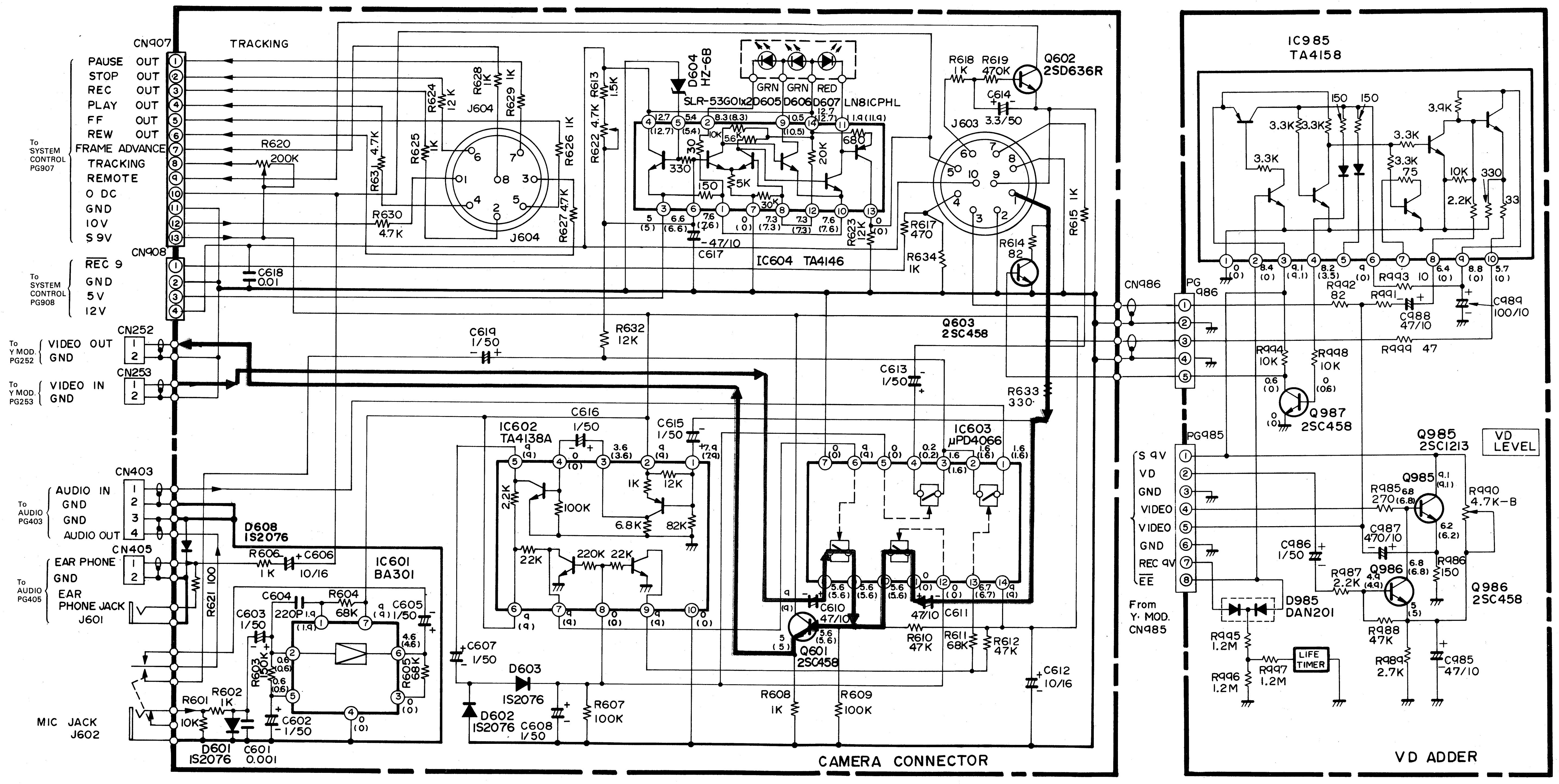
OVERALL BLOCK DIAGRAM — TUNER (Except for the UK model)



BOOSTER P.C.B
AERIAL
RF OUT
RF IN
RF AMP.
RF AMP. SPLITTER
12V
AFS SWITCH P.C.B
S6
ON
OFF
PG6
AFS 2
AFS 1
CN6
Q752
AFS
TUNER
BM
VT
BU
BH
BL
RF
GND
12V
IF OUT
Q701
BU DRIVE
Q702
BH DRIVE
Q703
BL DRIVE
Q704
VT
Q705
REG
CN952
49V
GND
To RECTIFIER PG952
TUNER P.C.B
PG802
CN701
32V
CN976
SAW FILTER
IC801
IF AMP.
VIDEO AMP.
CP852
TRAP
NOISE CANCEL
AGC DET.
SYNC DET.
AFT
AGC DELAY
RF AGC AMP.
AGC DELAY SWITCH
Q801
IC881
SIF AMP.
FM DET.
Q861
Q863
VIDEO AMP.
PG801
AUDIO
VIDEO
IF P.C.B
CN802
CN702
A ch
B ch
C ch
D ch
E ch
F ch
G ch
H ch
I ch
J ch
K ch
L ch
D731 ~ D742
S701 ~ S712
CHANNEL SELECTOR SWITCH
PROGRAM SELECTOR P.C.B
S771 ~ S782
D783 ~ D794
D771 ~ D782
VHF/UHF CELECTOR SWITCH
TUNING CONTROLS
PG701
PROGRAM PRESET P.C.B
CN801
To IF PG801
AUDIO OUT
VIDEO OUT
CN4
PB
To WIRING PG4
10P DIN CONNECTOR
RED
BLU
BLK
VCR ON
TIMER
CN974
12/15V
To REGULATOR PG974
OUT PUT SELECTOR
CN2
YEL
WHT
TIMER ON
TO POWER SWITCH PG2
AC120V 60Hz
P.T
230~250V
200~220V
115~127V
100~110V
S951
MAINS SW
F951 1A
LD3
LD1
LD2
CHARGE
OPERATE
TIMER
OPERATE DISPLAY P.C.B
ORN
WHT
VLT
BLU
OPERATE : OFF
OPERATE : ON
S10-1
S10-2
S11-1
S11-2
S12-1
S12-2
Q1
Q2
Q3
Q4
D1
D2
PG2
CN3
PG1
TIMER IN
OPERATE SWITCH P.C.B
PG3
PG4
WIRING P.C.B
CN975
12/15V
To REGULATOR PG975
D8
EXT. BATT. C.B.A
Q971
DC AMP
POWER TR P.C.B
POWER TR B
POWER TR C
POWER TR E
CHARGE
18V
12/15V
POWER OFF
CHARGE INDI.
INHIBIT
12V
TIMER SET
F953 1.25A
D958
RECT
D960,951
F952 4A
From TIMER CN953
PG953
50/60Hz(I)
50/60Hz(II)
From TUNER CN952
PG952
Q951
RECTIFIER P.C.B
49V
Q953
AMP
Q954
Q955
ERROR AMP
Q956
LIMI-TER
Q961
Q959
VOLT CONT.1
Q960
VOLT CONT.2
D954
Q962
Q963
D956
D961
D991
Q991
RELAY DRIVE
ABNORMAL HIGH VOLTAGE "ON"
Q958
Q957
PG976
PG974
PG975
REGULATOR P.C.B
To RECTIFIER CN953
FLUORESCENT INDICATOR
d1 d2 d3 d4
CN953
CN1
TIMER OUT
Q101, Q102
REG
PM
UP/DOWN COUNTER
INSTRUCTION-BUS 8bit
RAM DECODER
RAM 64x4
DATA POINTER
RAM BUFFER
P.BUS
Q.BUS 4bit
ALU
CONTR-OL DECOD-E
CARRIER FF
ACCUMU-LATOR
ROM 1000x8
PROGRAM COUNTER
STACK
INT FF
I/O INTERFACE
CLOCK GENERATOR
IC101
TIMER P.C.B
CN11
CLOCK SET
START
LENGTH
HOUR
MINUTE
PG11
S11 CLOCK SET
S12 START
S13 LENGTH
S14 HOUR DECREASE
S15 MINUTE INCREASE
S16 DAY
TIMER SET P.C.B

CAMERA CONNECTOR SCHEMATIC DIAGRAM

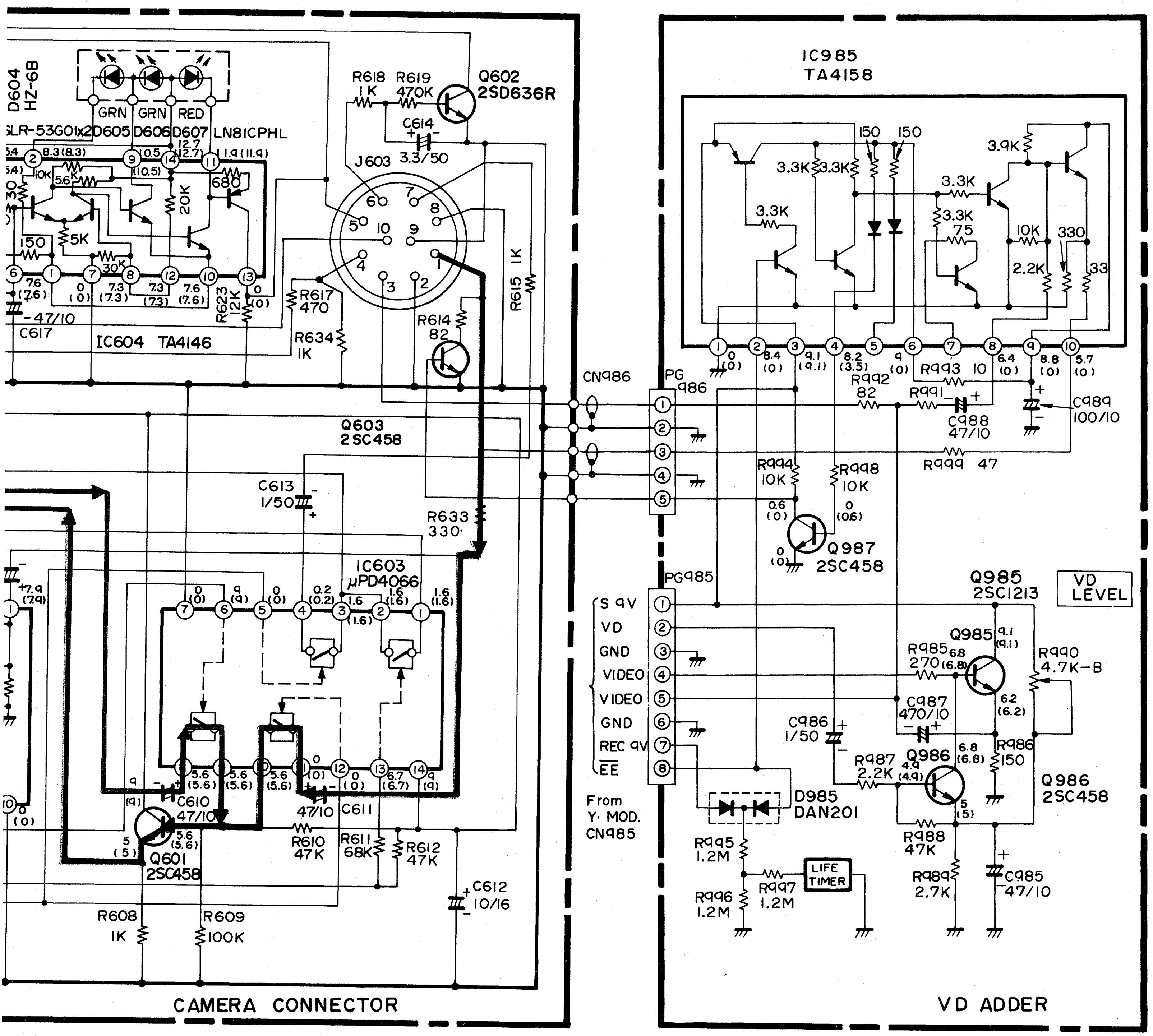
———— REC/EE VIDEO
– – – – REC CHROMA & APC
—— — —— REC LUMINANCE
………… PB VIDEO
…… — …… PB CHROMA & APC
………— — PB LUMINANCE



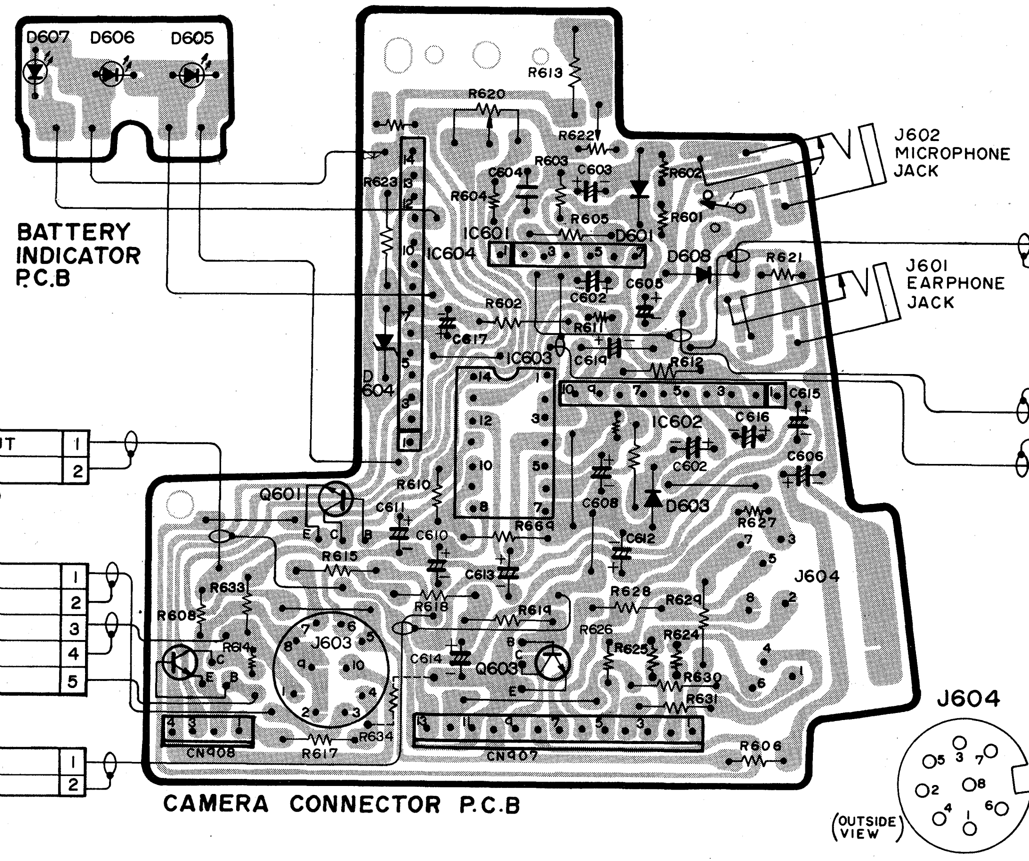
CN907
TRACKING
To SYSTEM CONTROL PG907
PAUSE OUT
STOP OUT
REC OUT
PLAY OUT
FF OUT
REW OUT
FRAME ADVANCE
TRACKING
REMOTE
0 DC
GND
10V
S 9V
CN908
To SYSTEM CONTROL PG908
REC 9
GND
5V
12V
R620 200K
C618 0.01
CN252
To Y MOD. PG252
VIDEO OUT
GND
CN253
To Y MOD. PG253
VIDEO IN
GND
CN403
To AUDIO PG403
AUDIO IN
GND
GND
AUDIO OUT
CN405
To AUDIO PG405
EAR PHONE
GND
EAR PHONE JACK J601
MIC JACK J602
D608 1S2076
R606 1K
C606 10/16
R621 100
IC601 BA301
C604 220P
R604 68K
C605 1/50
C603 1/50
R603 150K
R605 68K
R601 10K
R602 1K
D601 1S2076
C601 0.001
C602 1/50
R624 12K
R628 1K
R629 1K
J604
R625 1K
R631 4.7K
R630 4.7K
R626 1K
R627 4.7K
R613 1.5K
R622 4.7K
D604 HZ-6B
SLR-53G01x2 D605 D606 D607 LN81CPHL
GRN GRN RED
IC604 TA4146
C617 47/10
R623 12K
R617 470
R634 1K
R618 1K
R619 470K
Q602 2SD636R
C614 3.3/50
J603
R615 1K
R614 82
R632 12K
C619 1/50
Q603 2SC458
C613 1/50
R633 330
IC602 TA4138A
C616 1/50
C615 1/50
IC603 μPD4066
C610 47/10
C611 47/10
Q601 2SC458
R610 47K
R611 68K
R612 47K
C612 10/16
C607 1/50
D603 1S2076
D602 1S2076
C608 1/50
R607 100K
R608 1K
R609 100K
CAMERA CONNECTOR
CN986
PG986
IC985 TA4158
R993 10
R992 82
R991
C988 47/10
C989 100/10
R999 47
R994 10K
R998 10K
Q987 2SC458
PG985
S 9V
VD
GND
VIDEO
VIDEO
GND
REC 9V
EE
From Y. MOD. CN985
Q985 2SC1213
VD LEVEL
R985 270
R990 4.7K-B
C987 470/10
C986 1/50
R987 2.2K
Q986 2SC458
R986 150
D985 DAN201
R995 1.2M
R996 1.2M
R997 1.2M
LIFE TIMER
R988 47K
R989 2.7K
C985 47/10
VD ADDER

REC/EE VIDEO
REC CHROMA & APC
REC LUMINANCE

PB VIDEO
PB CHROMA & APC
PB LUMINANCE


D604
HZ-6B
GRN
GRN
RED
SLR-53G01x2
D605
D606
D607
LN81CPHL
R618
1K
R619
470K
Q602
2SD636R
C614
3.3/50
J603
IC604 TA4146
C617
-47/10
R623
12K
R617
470
R634
1K
R614
82
R615 1K
Q603
2SC458
C613
1/50
R633
330
IC603
μPD4066
C610
47/10
C611
47/10
Q601
2SC458
R610
47K
R611
68K
R612
47K
C612
10/16
R608
1K
R609
100K
CAMERA CONNECTOR
CN986
PG
986
IC985
TA4158
R992
82
R993 10
R991
C988
47/10
C989
100/10
R999 47
R994
10K
R998
10K
Q987
2SC458
PG985
S 9V
VD
GND
VIDEO
VIDEO
GND
REC 9V
EE
From
Y· MOD.
CN985
Q985
2SC1213
VD
LEVEL
R985
270
R990
4.7K-B
C987
470/10
C986
1/50
R987
2.2K
Q986
R986
150
Q986
2SC458
D985
DAN201
R995
1.2M
R996
1.2M
R997
1.2M
LIFE
TIMER
R988
47K
R989
2.7K
C985
47/10
VD ADDER

CAMERA CONNECTOR CIRCUIT BOARD DIAGRAM


D607
D606
D605
BATTERY
INDICATOR
P.C.B
J602
MICROPHONE
JACK
J601
EARPHONE
JACK
IC601
IC602
IC603
IC604
D604
Q601
Q603
J603
J604
(OUTSIDE
VIEW)
CN908
CN907

CAMERA CONNECTOR P.C.B

CN252

VIDEO OUT	1
GND	2

To Y MOD
PG252

CN986

VIDEO IN	1
GND	2
VIDEO IN	3
GND	4
CAMERA	5

CN253

VIDEO IN	1
GND	2

To Y MOD
PG253

CN405

1	EARPHONE
2	GND

To AUDIO
PG405

CN403

4	GND
3	AUDIO OUT
2	GND
1	AUDIO IN

To AUDIO
PG403

CN907

1	PAUSE OUT
2	STOP OUT
3	REC OUT
4	PLAY OUT
5	F.F OUT
6	REW OUT
7	FRAME ADVANCE
8	TRACKING
9	REMOTE
10	OVER DISCHARGE
11	GND
12	10V
13	S9V

To SYSTEM
CONTROL
PG907

CN908

1	$\overline{\text{REC}}$ 9V
2	GND
3	5V
4	12V

To SYSTEM
CONTROL
PG908

IC601

1	2	3	4	5	6	7
1.9 (1.9)	0.6 (0.6)	0 (0)	0 (0)	0.6 (0.6)	4.6 (4.6)	9 (9)

IC602

10	9	8	7	6	5	4	3	2	1
0 (0)	9 (9)	0 (0)	9 (9)	9 (9)	9 (9)	0 (0)	3.6 (3.6)	9 (9)	7.9 (7.9)

IC603

14	9 (9)	1	1.6 (1.6)
13	6.7 (6.7)	2	1.6 (1.6)
12	0 (0)	3	1.6 (1.6)
11	0 (0)	4	0.2 (0.2)
10	5.6 (5.6)	5	0 (0)
9	5.6 (5.6)	6	9 (9)
8	5.6 (5.6)	7	0 (0)

IC604

14	12.7 (12.7)	7	0 (0)
13	0 (0)	6	6.6 (6.6)
12	7.3 (7.3)	5	5.4 (5.4)
11	11.9 (11.9)	4	12.7 (12.7)
10	7.6 (7.6)	3	5 (5)
9	10.5 (10.5)	2	8.3 (8.3)
8	7.3 (7.3)	1	7.6 (7.6)

Q601

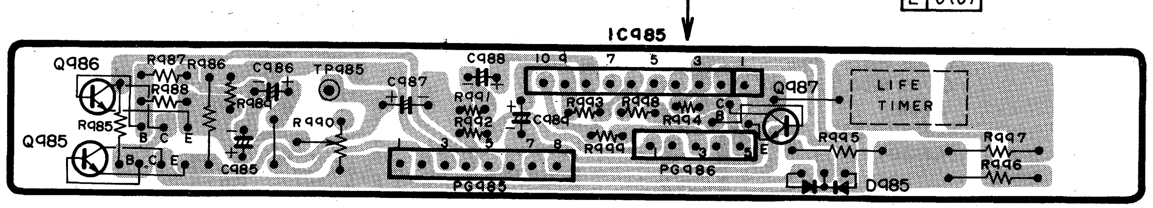
B	5.6 (5.6)
C	9 (9)
E	5 (5)

Q602

B	0 (0)
C	10 (10)
E	0 (0)

Q603

B	0 (0.6)
C	5.5 (0)
E	0 (0)


IC985
Q986
Q985
R987
R986
R988
R985
C986
TP985
C988
R991
R992
R990
C984
R993
R998
R994
C985
C987
Q987
LIFE
TIMER
R995
R997
R996
D985
PG985
PG986

VD ADDER P.C.B

PG985

1	S9V
2	VD
3	GND
4	VIDEO OUT
5	VIDEO IN
6	GND
7	REC9V
8	$\overline{\text{EE}}$ (H)

From
Y MODULATOR
CN985

IC985

10	9	8	7	6	5	4	3	2	1
5.7 (0)	8.8 (0)	6.4 (0)	–	9 (0)	–	8.2 (3.5)	9.1 (9.1)	8.4 (0)	0 (0)

Q985

B	6.8 (6.8)
C	9.1 (9.1)
E	6.2 (6.2)

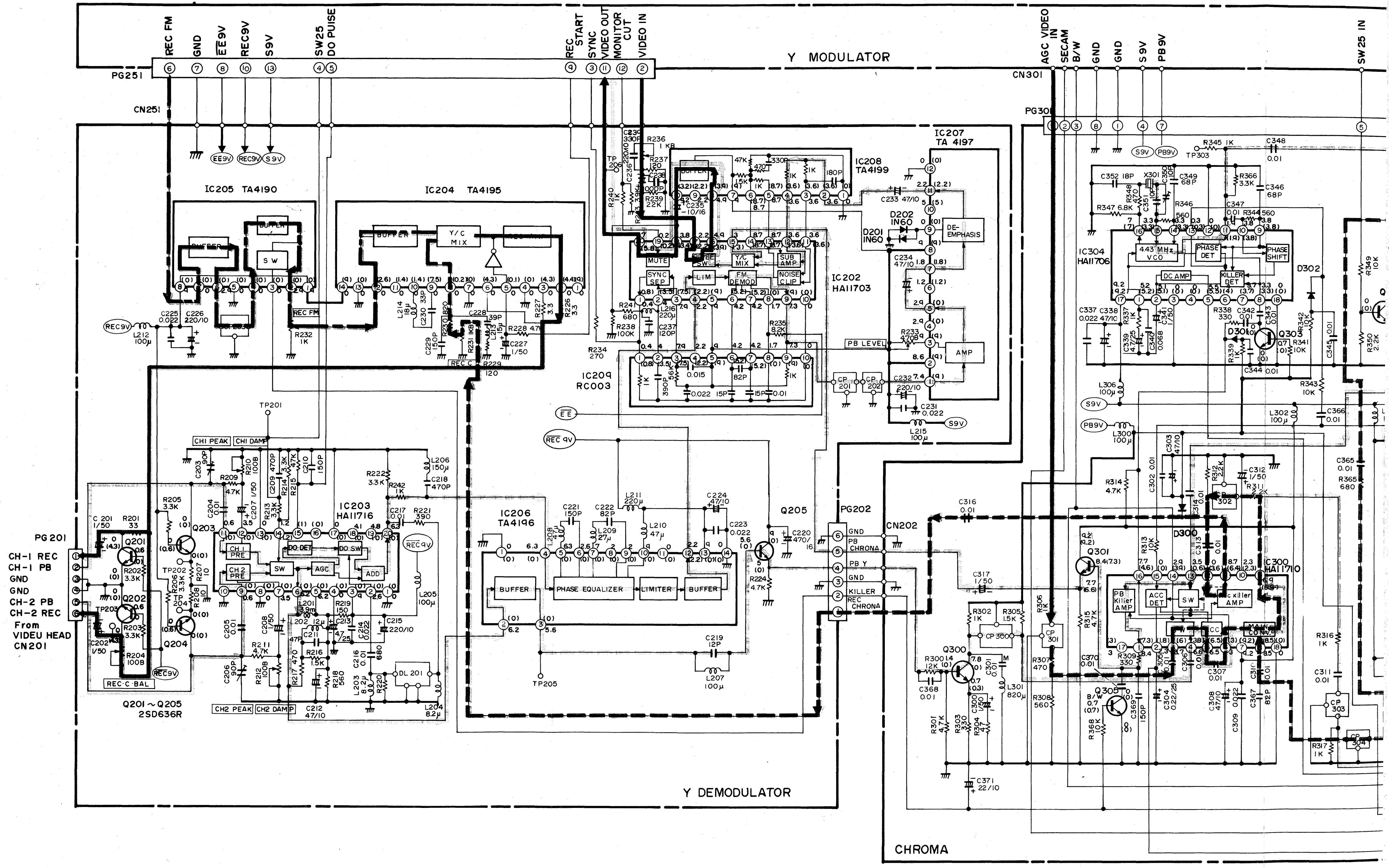
Q986

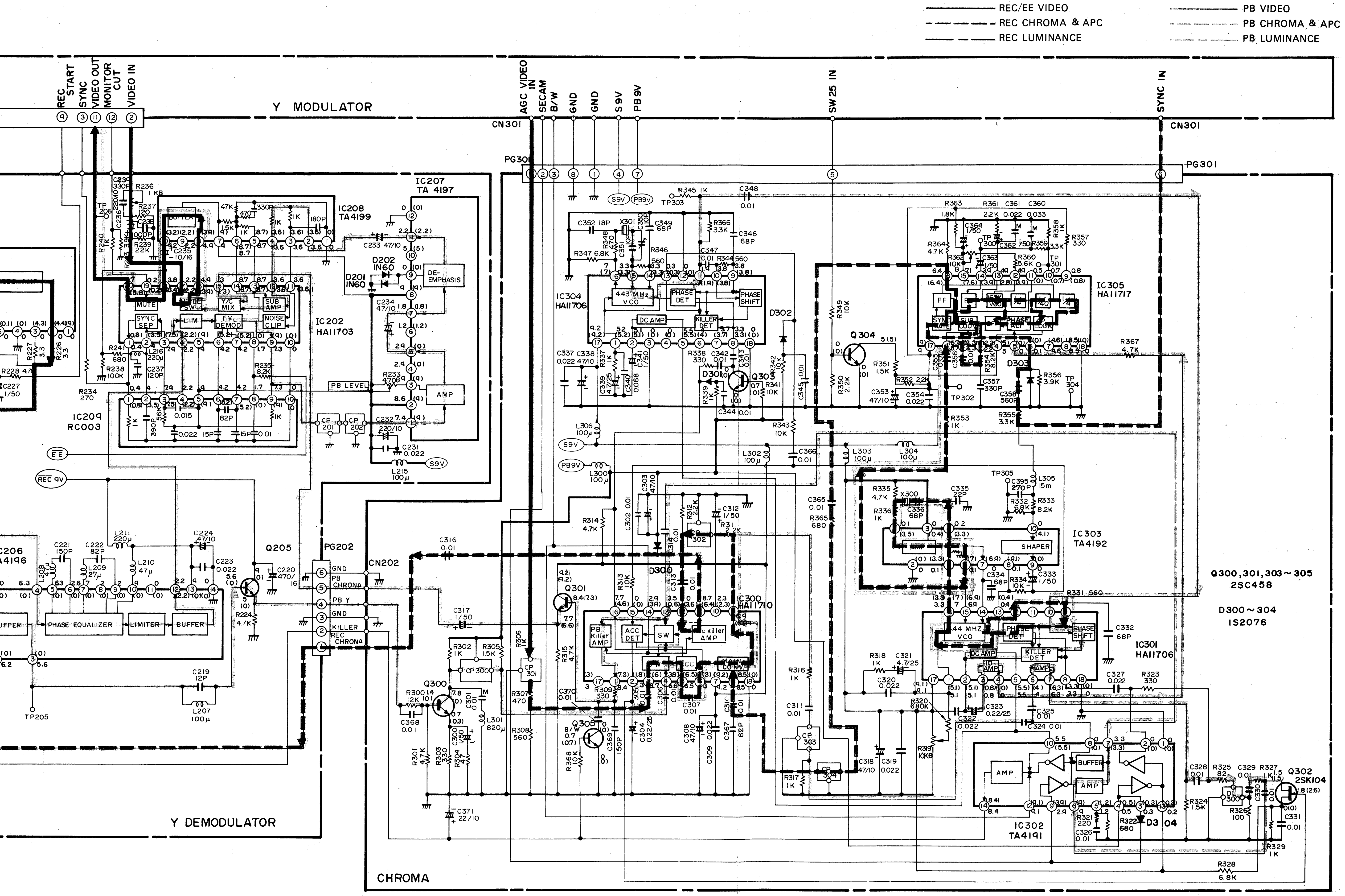
B	4.9 (4.9)
C	6.8 (6.8)
E	5 (5)

Q987

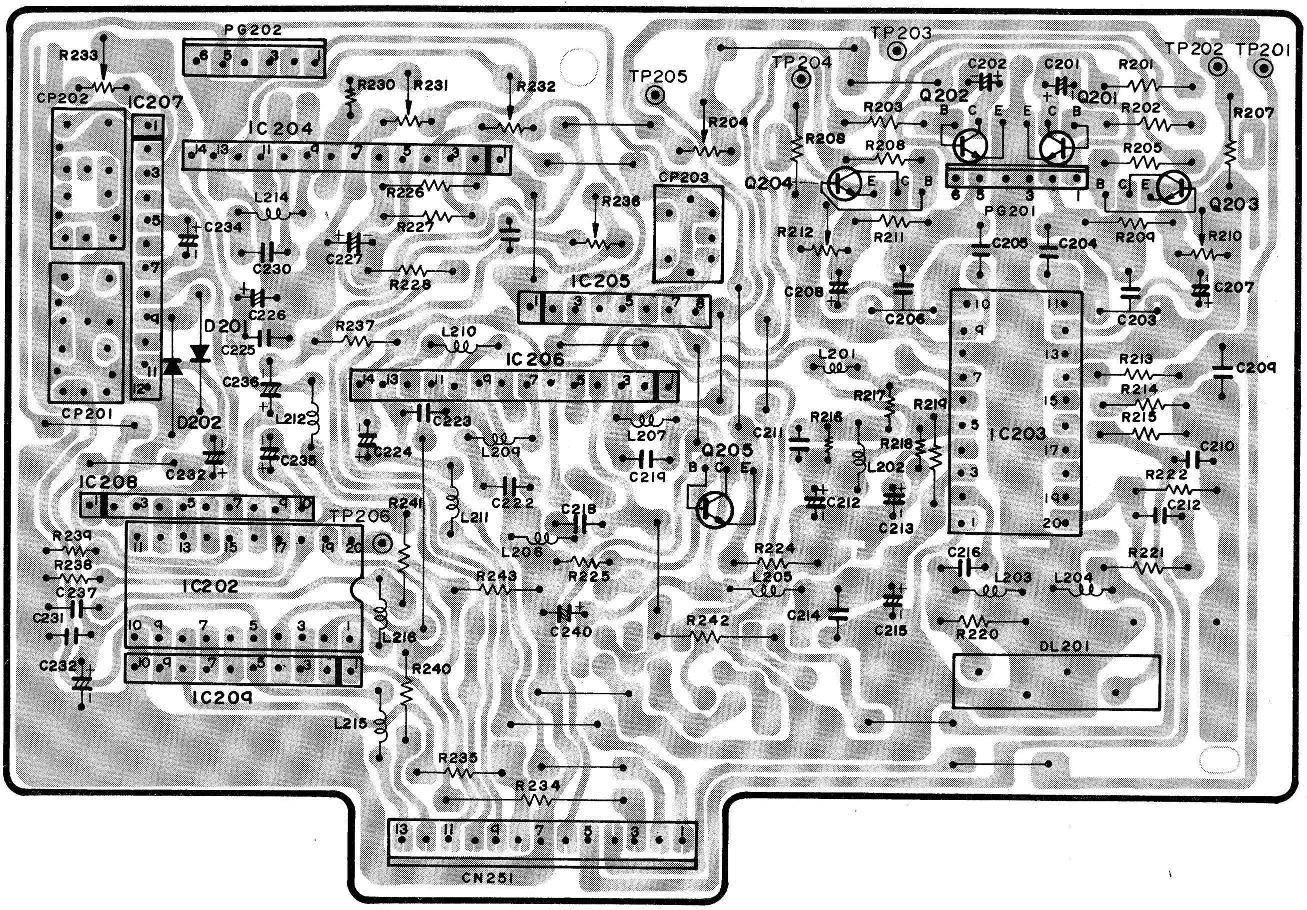
B	0 (0.6)
C	0.6 (0)
E	0 (0)

Y DEMODULATOR/CHROMA SCHEMATIC DIAGRAM


Y MODULATOR
PG251
CN251
REC FM
GND
EE9V
REC9V
S9V
SW25
DO PUISE
REC START
SYNC
VIDEO OUT
MONITOR CUT
VIDEO IN
IC205 TA4190
IC204 TA4195
BUFFER
SW
Y/C MIX
REC FM
IC208 TA4199
IC207 TA 4197
DE-EMPHASIS
AMP
PB LEVEL
D202 IN60
D201 IN60
MUTE
SYNC SEP
LIM
FM DEMOD
Y/C MIX
SUB AMP
NOISE CLIP
IC202 HA11703
IC209 RC003
CP 201
CP 202
TP201
TP202
TP203
TP205
TP206
CHI PEAK
CHI DAMP
CH2 PEAK
CH2 DAMP
IC203 HA11716
CH1 PRE
CH2 PRE
DO DET
DO SW
AGC
ADD
DL 201
IC206 TA4196
PHASE EQUALIZER
LIMITER
Q205
PG202
CN202
GND
PB CHROMA
PB Y
KILLER
REC CHRONA
EE
REC 9V
PG 201
CH-1 REC
CH-1 PB
GND
GND
CH-2 PB
CH-2 REC
From VIDEU HEAD CN201
REC·C·BAL
Q201~Q205 2SD636R
Q201
Q202
Q203
Q204
Y DEMODULATOR
CN301
PG301
AGC VIDEO IN
SECAM
B/W
S9V
PB9V
SW 25 IN
IC304 HA11706
4.43 MHz VCO
PHASE DET
PHASE SHIFT
DC AMP
KILLER DET
D302
D301
Q301
Q302
Q300
Q303
Q305
IC300 HA11710
PB Killer AMP
ACC DET
SW
c Killer AMP
MAIN CONV
CP 300
CP 301
CP 303
CP 304
D300
CHROMA


REC/EE VIDEO
REC CHROMA & APC
REC LUMINANCE
PB VIDEO
PB CHROMA & APC
PB LUMINANCE
Y MODULATOR
REC START
SYNC
VIDEO OUT
MONITOR CUT
VIDEO IN
AGC VIDEO IN
SECAM
B/W
GND
GND
S 9V
PB 9V
SW 25 IN
SYNC IN
CN301
PG301
IC207 TA 4197
IC208 TA4199
IC202 HA11703
IC209 RC003
DE-EMPHASIS
AMP
PB LEVEL
MUTE
SYNC SEP
LIM
FM DEMOD
Y/C MIX
SUB AMP
NOISE CLIP
BUFFER
D201 IN60
D202 IN60
CP 201
CP 202
L215 100μ
EE
REC 9V
IC206 TA4196
PHASE EQUALIZER
LIMITER
BUFFER
Q205
PG202
CN202
GND
PB CHROMA
PB Y
GND
KILLER
REC CHROMA
TP205
Y DEMODULATOR
IC304 HA11706
4.43 MHz VCO
PHASE DET
PHASE SHIFT
DC AMP
KILLER DET
D302
Q303
D301
Q304
IC305 HA11717
FF
SYNC GATE
SUB COUNT
VCO
PHASE ALT
LOCK
D303
TP302
TP303
TP304
TP305
IC303 TA4192
SHAPER
X300
X301
IC300 HA11710
PB Killer AMP
ACC DET
SW
c Killer AMP
ACC
MAIN CONV
D300
Q301
Q300
CP 300
CP 301
CP 302
CP 303
CP 304
Q305
IC301 HA11706
4.44 MHZ VCO
PHASE DET
PHASE SHIFT
DC AMP
ID AMP
KILLER DET
AMP
IC302 TA4191
AMP
BUFFER
AMP
D304
Q302 2SK104
Q300,301,303～305 2SC458
D300～304 1S2076
CHROMA

Y DEMODULATOR CIRCUIT BOARD DIAGRAM


PG202
R233
CP202
IC207
R230
R231
R232
TP205
TP203
TP204
TP202
TP201
C202
C201
R201
R202
R207
IC204
R203
Q202
Q201
R204
R208
R206
CP203
Q204
PG201
R205
Q203
L214
R226
R236
R212
R211
R209
R210
C234
C227
R227
C230
C205
C204
C207
C226
R228
IC205
C208
C206
C203
D201
C225
R237
L210
IC206
L201
R213
C209
C236
R217
R219
R214
R215
L212
C223
L209
L207
Q205
C211
R216
R218
IC203
C210
D202
C224
C235
C219
L202
R222
C232
IC208
R241
L211
C222
C218
C212
C213
C212
TP206
L206
R239
R238
C237
IC202
R243
R225
R224
L205
C216
L203
L204
R221
C231
C240
R242
C214
C215
R220
DL201
C232
L216
IC209
R240
L215
R235
R234
CN251

IC202

11	12	13	14	15	16	17	18	19	20
3.6 (3.6)	3.6(3.6)	8.7(8.7)	8.7 (8.7)	3.0 (3.0)	4.9(3.9)	2.2(2.2)	3.8 (3.4)	0.2(0.2)	7.0(5.8)
10	9	8	7	6	5	4	3	2	1
0 (0)	7.3(9.0)	1.7 (0)	4.2 (5.2)	4.2(5.2)	9.0(9.0)	2.2(2.2)	7.9 (7.5)	4.0(3.5)	0.4 (0.8)

IC203

10	0 (0)	11	0.6 (0)
9	0.6 (0)	12	3.5 (0)
8	0 (0)	13	0 (0)
7	3.5 (0)	14	1.2 (1.2)
6	6.2 (0)	15	5.3 (1.0)
5	6.2 (0)	16	7.4 (0)
4	0 (0)	17	0 (0)
3	9.0 (0)	18	4.1 (0)
2	2.6 (0)	19	4.8 (0)
1	0 (0)	20	6.3 (0)

CN251

1	$\overline{\text{REC}}$ 9V
2	VIDEO IN
3	SYNC
4	SW 25
5	DO OUT
6	REC Y
7	GND
8	$\overline{\text{EE}}$ 9V
9	REC START
10	REC 9V
11	VIDEO OUT
12	MONITOR CUT
13	S 9V

To
Y MOD.
PG251

IC204

7	6	5	4	3	2	1
0 (0)	0 (4.3)	0 (0.1)	0 (0)	0 (4.3)	0 (4.4)	0 (9.0)
14	13	12	11	10	9	8
0 (9.0)	0 (0)	0 (2.6)	0 (1.4)	0 (1.4)	0 (7.5)	0 (0.2)

IC205

1	2	3	4	5	6	7	8
9.0 (0)	2.9 (0)	0 (0)	0 (0)	0 (0)	2.9 (0)	0 (0)	9.0 (0)

IC206

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0 (0)	9.0 (0)	2.2 (2.2)	0 (0)	9.0 (0)	2.0 (0)	2.0 (0)	7.0 (0)	2.6 (0)	6.3 (0)	6.3 (0)	5.6 (0)	6.2 (0)	0 (0)

PG201

1	CH-1 REC
2	CH-1 PB
3	GND
4	GND
5	CH-2 PB
6	CH-2 REC

From
VIDEO
HEAD
CN201

IC207

1	7.4 (9.0)
2	8.6 (9.0)
3	9.0 (9.0)
4	2.9 (0)
5	2.9 (0)
6	1.2 (1.2)
7	1.8 (1.8)
8	9.0 (9.0)
9	0 (0)
10	5.0 (5.0)
11	2.2 (2.2)
12	0 (0)

IC208

1	2	3	4	5	6	7	8	9	10
0 (0)	3.6 (3.6)	3.6 (3.6)	3.6 (3.6)	8.7 (8.7)	8.7 (8.7)	9.0 (9.0)	4.9 (3.9)	2.2 (2.2)	4.2 (3.2)

IC209

10	9	8	7	6	5	4	3	2	1
0 (0)	7.3 (9.0)	1.7 (0)	4.2 (5.2)	4.2 (5.2)	9.0 (9.0)	2.2 (2.2)	7.9 (7.5)	4.0 (3.5)	0.4 (0.8)

PG202

1	REC CHROMA
2	CHROMA KILL
3	GND
4	PB LUMINANCE
5	PB CHROMA
6	GND

From
CHROMA
CN202

Q201

B	0.6 (0)
C	0 (4.3)
E	0 (0)

Q202

B	0.6 (0)
C	0 (4.3)
E	0 (0)

Q203

B	0 (0.6)
C	0 (0)
E	0 (0)

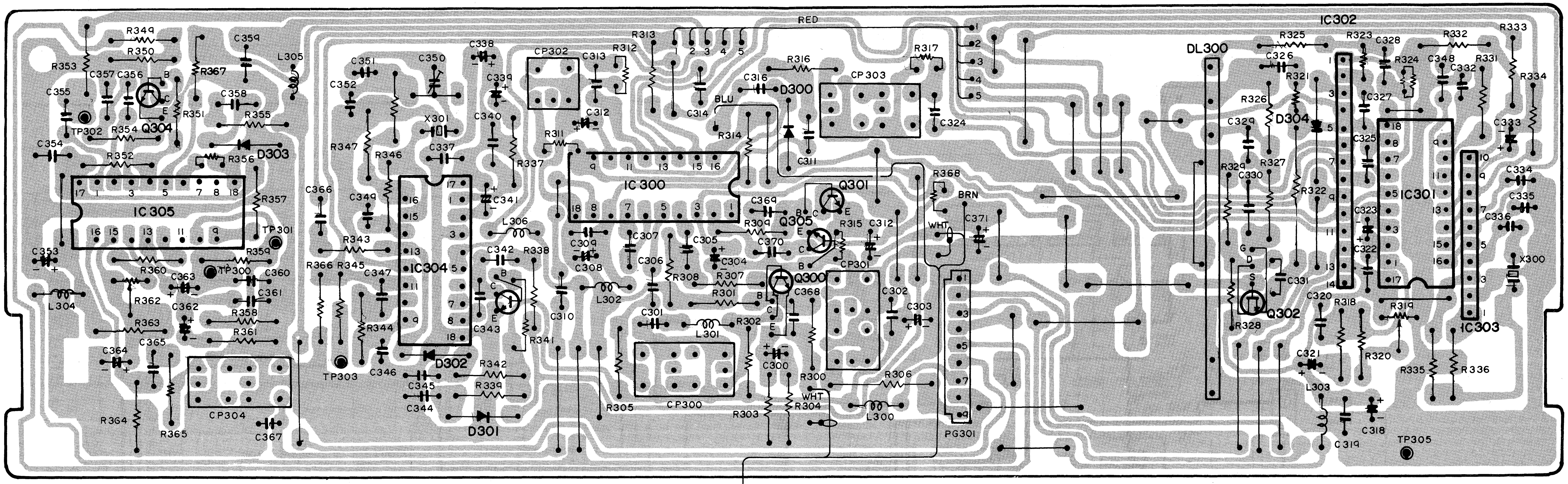
Q204

B	0 (0.6)
C	0 (0)
E	0 (0)

Q205

B	5.6 (0)
C	9.0 (0)
E	5.0 (0)

CHROMA CIRCUIT BOARD DIAGRAM


R349
R350
R353
C357 C356
C359
L305
R367
C355
R351
C358
R355
TP302
R354 Q304
C354
R352
R356 D303
IC305
R357
TP301
C353
R359
R360
TP300
C360
C363
C361
L304
R362
C362
R358
R363
R361
C365
C364
R364
R365
CP304
C367
C351
C350
C352
C338
C339
C340
X301
C337
R347
R346
C366
C349
R343
R366 R345
C347
IC304
C341
L306
C342
R338
C343
R344
TP303
C346
D302
R342
C345
R339
C344
D301
CP302
C313
R312
R313
C312
R311
R337
IC 300
C309
C308
C307
C306
C305
C304
R308
R307
R301
C310
L302
C301
L301
R302
CP300
R305
RED
C316
D300
R316
CP 303
C314
BLU
R314
C311
R317
C324
Q301
C369
R309
Q305
R315
C312
C370
CP301
Q300
C368
C302
C303
C300
R300
R306
R303
R304
WHT
L300
R368
BRN
WHT
C371
PG301
DL300
IC302
R325
R323
C328
R332
R333
C326
R324
C348
R331
R321
C332
R334
R326
C327
C329
D304
C333
C325
R329
R327
C330
R322
IC301
C334
C335
C323
C336
C322
X300
C331
Q302
C320
R318
R319
IC303
R328
C321
R320
R335
R336
L303
C319
C318
TP305

CN202

1	REC CHROMA	BLU
2	KILLER OUT	BRN
3	GND	WHT
4	PB Y R IN	GRY
5	PB CHOMA OUT	BLK
6	GND	

TO
Y DEMOD.
PG202

PG301

1	GND
2	SECAM
3	B/W
4	S 9V
5	SW25
6	SYNC
7	$\overline{\text{REC}}$ 9V
8	GND
9	VIDEO IN

FROM
Y MODULATOR
CN301

IC305

17	1	2	3	4	5	6	7	8	18
9 (9)	5.7 (5.7)	3.3 (3.3)	2.2 (2.2)	5 (5)	0 (0)	0.1 (0)	4.6 (4.6)	8.5 (8.5)	0 (0)
	16	15	14	13	12	11	10	9	
	6.4 (6.4)	7.1 (7.6)	3.9 (3.9)	4.9 (2.8)	4.9 (3.9)	0.5 (0)	0.7 (0.7)	0.8 (0.8)	

IC300

	9	10	11	12	13	14	15	16	
	6.9 (6.9)	2.3 (2.3)	8.7 (6.4)	0 (3.6)	3.5 (0.6)	2.9 (3.9)	0 (0)	7.7 (4.6)	
18	8	7	6	5	4	3	2	1	17
0 (0)	8.5 (8.5)	9.2 (9.2)	3 (3)	6.5 (6.5)	6.6 (3.8)	3.7 (6)	2.3 (1.8)	8.4 (7.3)	3 (3)

IC304

		17	9.2 (9.2)
16	7 (7)	1	5.2 (5.2)
15	3.3 (3.3)	2	5.1 (5.1)
14	3.3 (3.3)	3	0 (0)
13	0.3 (0.3)	4	0 (0)
12	0 (0)	5	5.5 (5.5)
11	1.9 (1.9)	6	4 (4)
10	3.8 (3.8)	7	3.7 (3.7)
9	3.8 (3.8)	8	3.3 (3.3)
		18	0 (0)

IC303

10	0 (4.1)
9	0 (0)
8	0.1 (9.1)
7	0 (6.9)
6	.01 (7)
5	.01 (3.3)
4	.02 (3.3)
3	0 (0.4)
2	.01 (9.1)
1	.01 (3.5)

IC302

1	0 (0)
2	0 (0)
3	.04 (0.2)
4	.06 (0.3)
5	0 (0.5)
6	0 (1.2)
7	.03 (3.3)
8	0 (0)
9	0 (9)
10	0 (5.5)
11	0 (.01)
12	2.9 (3.9)
13	.01 (9.1)
14	.02 (8.4)

IC301

18	0 (0)		
8	3.3 (3.3)	9	3.7 (3.7)
7	6.3 (6.3)	10	3.7 (3.7)
6	4 (4)	11	2.3 (2.3)
5	5.5 (5.5)	12	3.7 (3.7)
4	0 (0)	13	0.4 (0.4)
3	0.8 (0.8)	14	6.9 (6.9)
2	5.1 (5.1)	15	7 (7)
1	5.1 (5.1)	16	3.3 (3.3)
17	9.1 (9.1)		

Q305

B	0.7 (0.7)
C	0 (0)
E	0 (0)

Q304

B	0 (0)
C	5 (5)
E	0 (0)

Q303

B	0.7 (0)
C	0 (0)
E	0 (0)

Q302

G	1.8 (2.6)
D	1.5 (1.5)
S	0 (0)

Q301

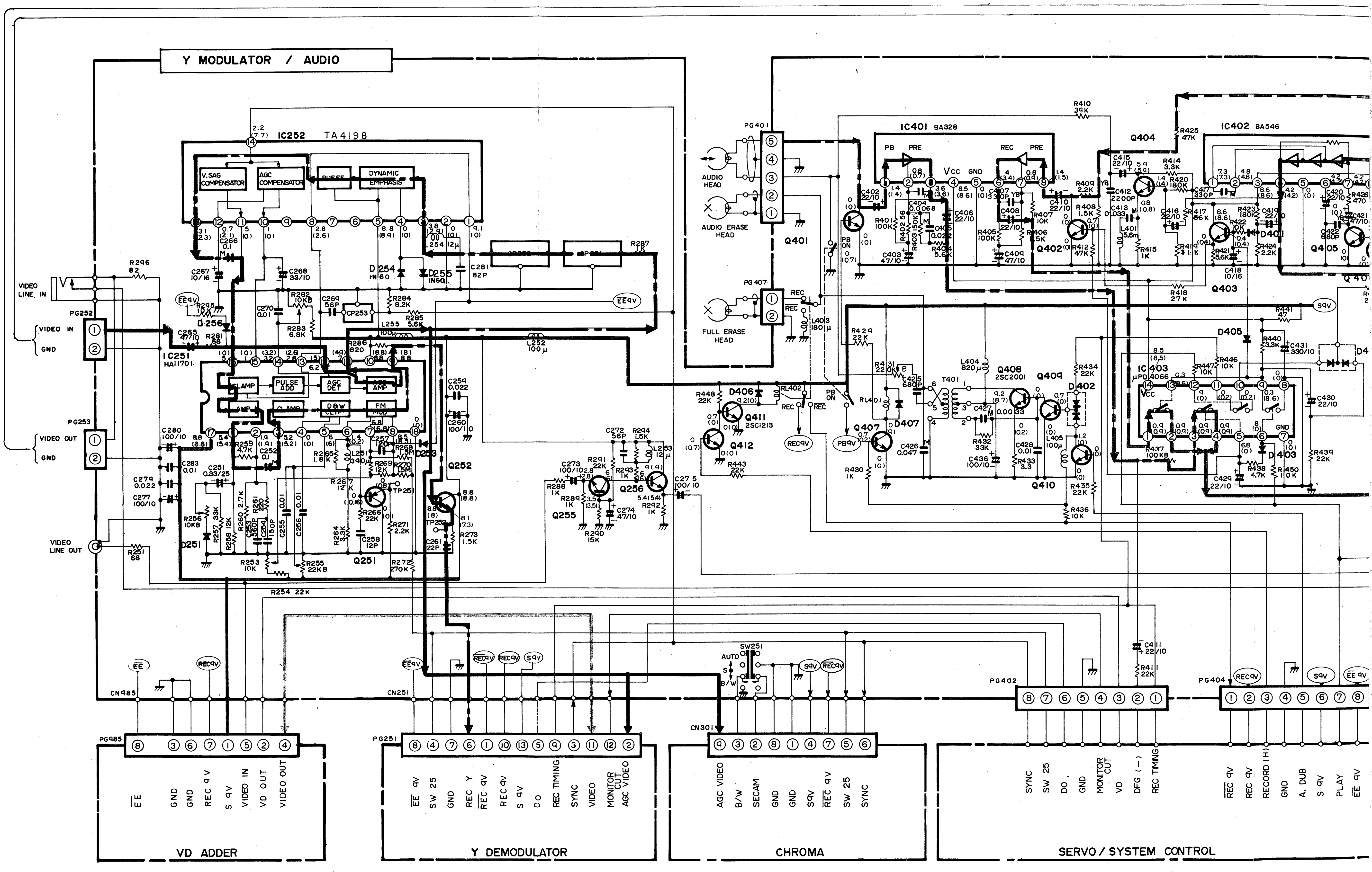
B	8.4 (7.3)
C	9.2 (9.2)
E	7.7 (6.6)

Q300

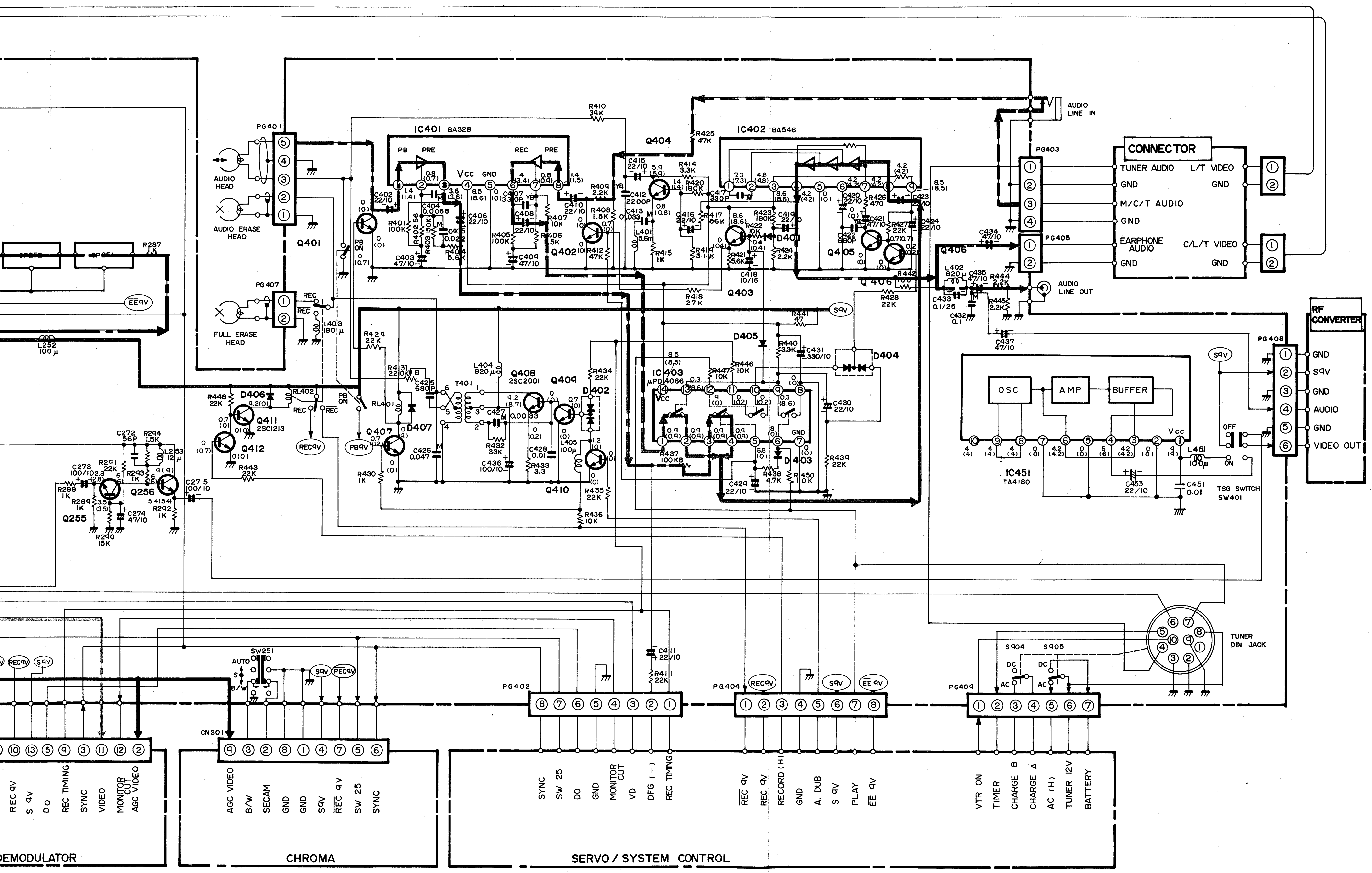
B	1.4 (0)
C	7.8 (0)
E	0.7 (0.3)

Y MODULATOR/AUDIO SCHEMATIC DIAGRAM

REC/P
REC A
PB AU

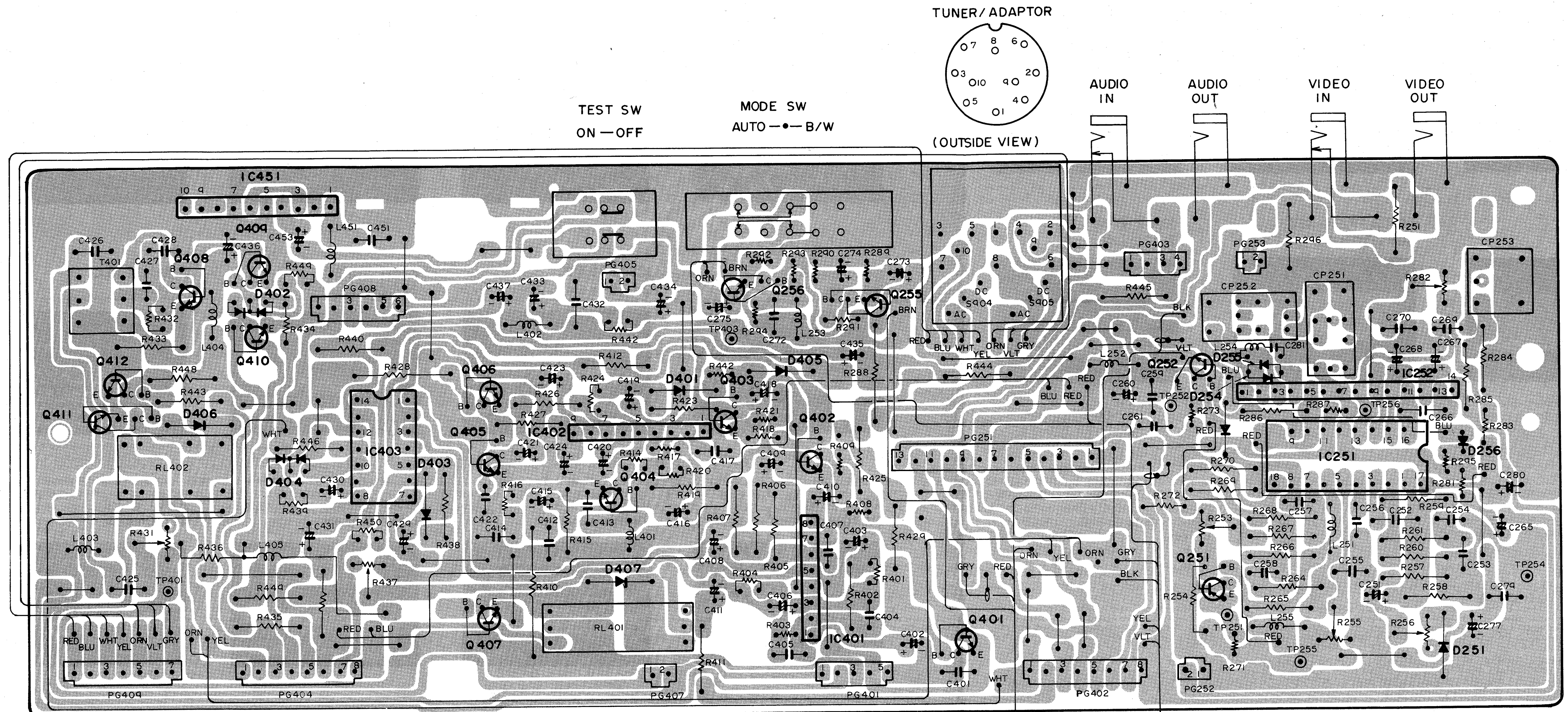

Y MODULATOR / AUDIO
IC252 TA4198
V. SAG COMPENSATOR
AGC COMPENSATOR
BUFFER
DYNAMIC EMPHASIS
IC251 HA11701
CLAMP
PULSE ADD
AGC DET
AGC AMP
AMP
D&W CLIP
FM MOD
VIDEO LINE IN
PG252
VIDEO IN
GND
PG253
VIDEO OUT
GND
VIDEO LINE OUT
Q251
Q252
Q255
Q256
D251
D254
D255
D256
D253
PG401
AUDIO HEAD
AUDIO ERASE HEAD
PG407
FULL ERASE HEAD
IC401 BA328
PB
PRE
REC
Vcc
GND
Q401
Q402
Q403
Q404
IC402 BA546
Q405
D401
D405
IC403 μPD4066
D402
D403
D406
D407
Q407
Q408 2SC2001
Q409
Q410
Q411 2SC1213
Q412
T401
RL401
RL402
SW251
AUTO
B/W
EEqV
RECqV
PBqV
SqV
CN985
PG985
CN251
PG251
CN301
PG402
PG404
EE
GND
REC qV
S qV
VIDEO IN
VD OUT
VIDEO OUT
VD ADDER
EE qV
SW 25
REC Y
REC qV
DO
REC TIMING
SYNC
VIDEO
MONITOR OUT
AGC VIDEO
Y DEMODULATOR
B/W
SECAM
SqV
CHROMA
MONITOR CUT
VD
DFG (−)
SERVO / SYSTEM CONTROL
RECORD (H)
A. DUB
PLAY

REC/PB AUDIO
REC AUDIO & SYNC
PB AUDIO
REC/EE VIDEO
REC CHROMA & APC
REC LUMINANCE
PB VIDEO
PB CHROMA & APC
PB LUMINANCE



IC401 BA328
IC402 BA546
IC403 μPD4066
IC451 TA4180
PB PRE
REC PRE
Vcc GND
Q401
Q402
Q403
Q404
Q405
Q406
Q407
Q408 2SC2001
Q409
Q410
Q411 2SC1213
Q412
Q255
Q256
D401
D402
D404
D405
D406
D407
D403
PG401
PG402
PG403
PG404
PG405
PG407
PG408
PG409
CN301
SW251
AUTO
S
B/W
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO LINE IN
AUDIO LINE OUT
CONNECTOR
TUNER AUDIO
GND
M/C/T AUDIO
EARPHONE AUDIO
L/T VIDEO
C/L/T VIDEO
RF CONVERTER
GND
S9V
AUDIO
VIDEO OUT
OSC
AMP
BUFFER
TSG SWITCH SW401
OFF
ON
TUNER DIN JACK
S904
S905
DC
AC
RL401
RL402
REC
PB ON
EE9V
REC9V
PB9V
S9V
SYNC
SW 25
DO
GND
MONITOR CUT
VD
DFG (−)
REC TIMING
REC 9V
REC 9V
RECORD (H)
A. DUB
S 9V
PLAY
EE 9V
VTR ON
TIMER
CHARGE B
CHARGE A
AC (H)
TUNER 12V
BATTERY
AGC VIDEO
B/W
SECAM
SW 25
REC TIMING
VIDEO
DEMODULATOR
CHROMA
SERVO / SYSTEM CONTROL

Y MODULATOR/AUDIO CIRCUIT BOARD DIAGRAM


TUNER/ADAPTOR
(OUTSIDE VIEW)
AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT
TEST SW
ON — OFF
MODE SW
AUTO —•— B/W
IC451
IC402
IC403
IC401
IC251
IC252
Q251
Q252
Q255
Q256
Q401
Q402
Q403
Q404
Q405
Q406
Q407
Q408
Q409
Q410
Q411
Q412
D251
D254
D255
D256
D401
D402
D403
D404
D405
D406
D407
RL401
RL402
T401
PG251
PG252
PG253
PG401
PG402
PG403
PG404
PG405
PG407
PG408
PG409
CP251
CP252
CP253
TP251
TP252
TP254
TP255
TP256
TP401
TP403
S904
S905

CN985

TO
Y DEMOD.
PG991

1	S9V	BRN
2	VD	RED
3	GND	
4	VIDEO OUT	GRY
5	VIDEO IN	BLK
6	GND	
7	REC 9V	ORN
8	$\overline{\text{EE}}$ 9V	VLT

FROM FULL
ERASE HEAD
CN407

PG407

1	FULL ERASE
2	GND

FROM RF
CONVERTER
CN408

PG408

1	GND
2	S9V
3	GND
4	AUDIO OUT
5	GND
6	VIDEO OUT

FROM
SYSTEM
CONTROL
CN409

PG409

1	VTR ON
2	TIMER
3	CHARGE B
4	CHARGE A
5	AC
6	TUNER 12V
7	BATTERY

FROM CAMERA
CONNECTOR
CN403

PG403

1	AUDIO OUT
2	GND
3	AUDIO IN
4	GND

FROM
SYSTEM
CONTROL
CN404

PG404

1	$\overline{\text{REC}}$ 9V
2	REC 9V
3	REC
4	GND
5	DUB
6	S9V
7	PB
8	$\overline{\text{EE}}$ 9V

FROM CAMERA
CONNECTOR
CN405

PG405

1	EARPHONE
2	GND

IC 251

	9	10	11	12	13	14	15	16	
	8.8 (8.0)	8.8 (8.8)	7.0 (4.9)	6.2 (5.0)	2.8 (2.6)	3.2 (3.2)	1.0 (0)	5.0 (0)	
18	8	7	6	5	4	3	2	1	17
0 0	8.5 (6.8)	6.8 (6.8)	1.4 (0.2)	6.0 (6.0)	0 (0)	5.2 (5.2)	1.9 (1.9)	5.4 (5.4)	8.8 (8.8)

FROM
AUDIO HEAD
CN401

PG401

1	GND
2	AUDIO ERASE
3	AUDIO REC
4	GND
5	AUDIO PB

FROM
SERVO
CN402

PG402

1	REC TIMING
2	DFG (−)
3	VD
4	MONITOR CUT
5	GND
6	DO
7	SW25
8	SYNC

IC402

9	8	7	6	5	4	3	2	1
8.5 (8.5)	4.2 (4.2)	4.2 (4.2)	4.2 (4.2)	0 (0)	4.2 (4.2)	8.6 (8.6)	4.8 (4.8)	7.3 (7.3)

IC451

10	9	8	7	6	5	4	3	2	1
4.0 (4.0)	4.0 (4.0)	4.0 (4.0)	0 (0)	4.2 (4.2)	0 (0)	6.0 (6.0)	4.2 (4.2)	0 (0)	9.0 (9.0)

TO
CHROMA
PG301

CN301

1	GND	BLK
2	SECAM	BRN
3	B/W	BRN
4	S 9V	RED
5	SW25	YEL
6	SYNC	VLT
7	$\overline{\text{REC}}$ 9V	GRY
8	GND	
9	AGC VIDEO	

FROM
Y DEMOD.
CN251

PG251

1	$\overline{\text{REC}}$ 9V
2	VIDEO OUT
3	SYNC
4	SW 25
5	DO
6	REC FM
7	GND
8	$\overline{\text{EE}}$ 9V
9	REC TIMING
10	REC9V
11	VIDEO IN
12	MONITOR CUT
13	S 9V

FROM CAMERA
CONNECTOR
CN252

PG252

1	VIDEO IN
2	GND

FROM CAMERA
CONNECTOR
CN253

PG253

1	VIDEO OUT
2	GND

IC252

1	2	3	4	5	6	7
9.1 (0)	0 (0)	3.8 (2.9)	0	8.8 (8.9)	—	—
8	9	10	11	12	13	14
2.8 (2.6)	—	1.0 (0)	5.0 (0)	0.7 (2.1)	3.1 (2.3)	2.2 (7.7)

IC401

8	1.4 (1.5)
7	0.8 (0.9)
6	4.0 (3.4)
5	0 (0)
4	8.5 (8.6)
3	3.6 (3.6)
2	0.8 (0.9)
1	1.4 (1.4)

IC403

14	8.5 (8.6)	1	0.9 (0.9)
13	0.3 (8.6)	2	0.9 (0.9)
12	9.0 (0)	3	0.9 (0.9)
11	0 (0.2)	4	0.9 (0.9)
10	0 (0.2)	5	6.8 (0)
9	0.3 (8.6)	6	8.0 (0)
8	0 (0)	7	0 (0)

Q251

B	0 (0.16)
C	0 (0)
E	0 (0.8)

Q252

B	8.8 (8.0)
C	8.8 (8.8)
E	8.1 (7.3)

Q255

B	3.5 (3.5)
C	6.0 (6.0)
E	2.4 (2.4)

Q256

B	6.0 (6.0)
C	9.0 (9.0)
E	5.4 (5.4)

Q401

B	0 (0.7)
C	0 (0)
E	0 (0)

Q402

B	0.7 (0)
C	0 (0)
E	0 (0)

Q403

B	0.4 (0.4)
C	8.6 (8.6)
E	0.4 (0)

Q404

B	1.4 (1.4)
C	5.9 (5.9)
E	0.8 (0.8)

Q405

B	0.7 (0)
C	0 (0)
E	0 (0)

Q406

B	0.2 (0.2)
C	0.7 (0.7)
E	0 (0)

Q407

B	0.7 (0.2)
C	0 (9.0)
E	0 (0)

Q408

B	0 (0)
C	9.2 (8.7)
E	0 (0.2)

Q409

B	0.7 (0)
C	0 (0)
E	0 (0)

Q410

B	0 (0)
C	1.2 (0)
E	0 (0)

Q411

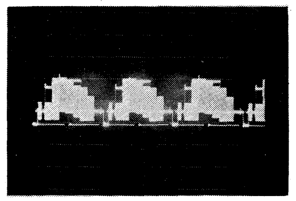
B	0.7 (0)
C	0 (9.2)
E	0 (0)

Q412

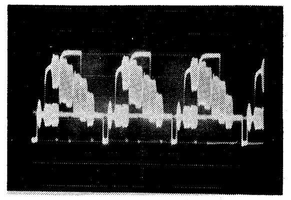
B	0 (0.7)
C	0.7 (0)
E	0 (0)

Y DEMODULATOR WAVEFORMS

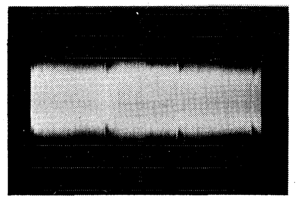
TP206 REC
1V/20μs.div.



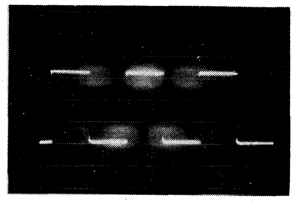
IC204 ⑪ REC
0.2V/20μs.div.



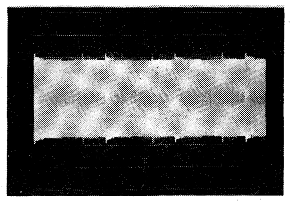
TP205 PB
SP 0.2V/5ms.div.



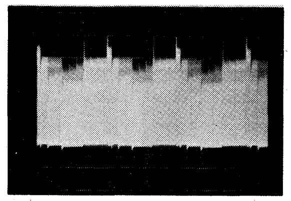
TP201 PB/REC
2V/10μs.div.



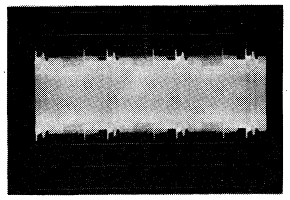
TP203 REC
1V/20μs.div.



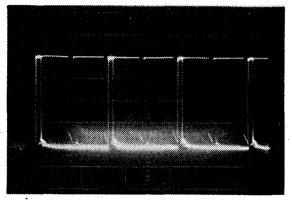
IC202 ⑨ PB
0.2/20μs.div.



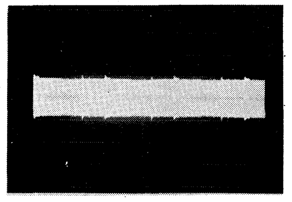
TP202, TP204, REC
50mV/20μs.div.



IC202 ① PB
2V/20μs.div.

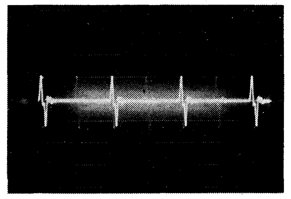


TP206 PB
0.5V/20μs.div.

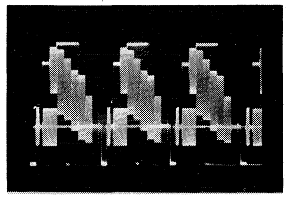


Y MODULATOR WAVEFORMS

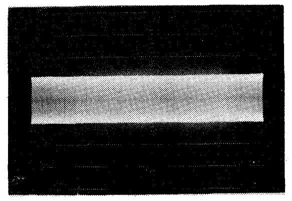
IC251 ⑬ REC/STOP
1V/20μs.div.



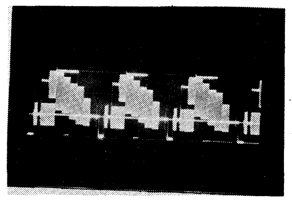
IC201 ⑯ STOP
0.2V/20μs.div.



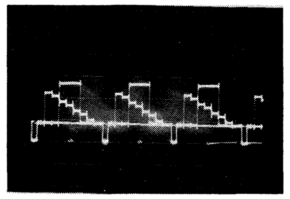
TP252 REC
0.5V/20μs.div.



PG252 ① STOP
0.5V/20μs.div.

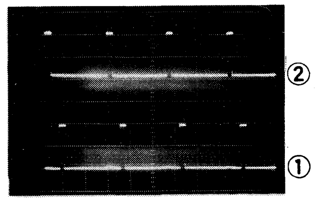


IC251 ⑪ REC
0.2V/20μs.div.

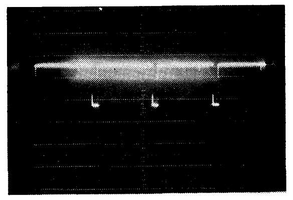


SYSTEM CONTROL WAVEFORMS

IC901 ① ② STOP
① ② 5V/ms. div.

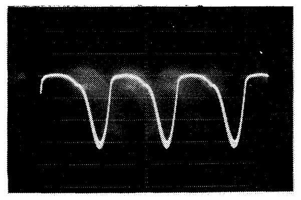


IC901 ㊶ STOP
50mV/2mV. div.

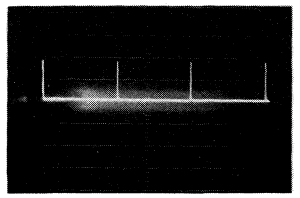


SERVO WAVEFORMS

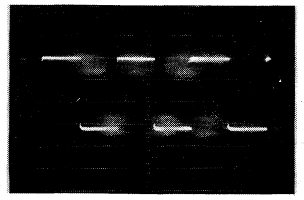
IC501 ① REC
0.2V/20μs.div.



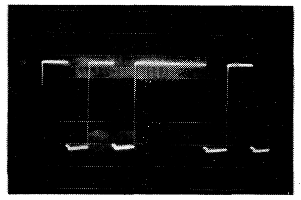
IC501 ⑩ REC
2V/10ms. div.



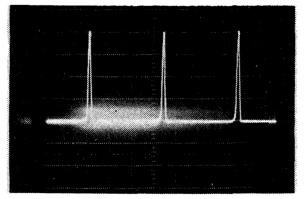
IC501 ⑯ REC
2V/10ms.div.



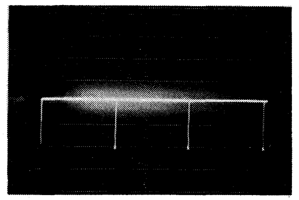
IC501 ㉒ REC
EP 0.5V/2ms.div.



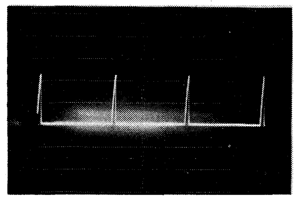
IC501 ② PB
0.5V/10μs.div.



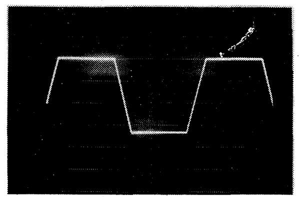
IC501 ⑪ REC
2V/10ms.div.



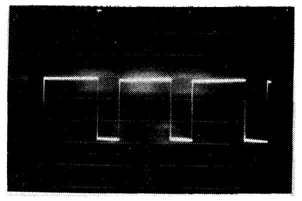
IC501 ⑰ REC
2V/10ms.div.



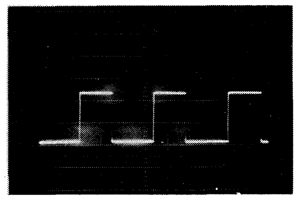
IC501 ㉔ REC
2V/5ms.div.



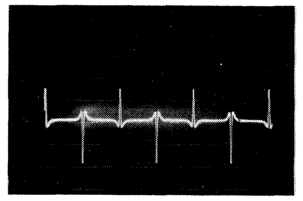
IC501 ④ REC
2V/10μs.div.



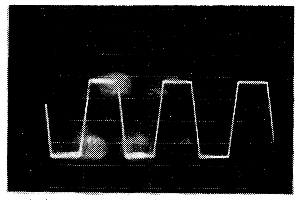
IC501 ⑪ PB
2V/10ms.div.



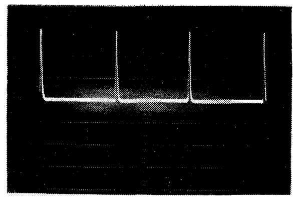
IC501 ⑲ REC
0.5V/10ms.div.



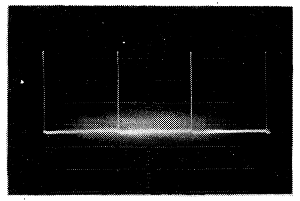
IC501 ㉔ PB
2V/10ms.div.



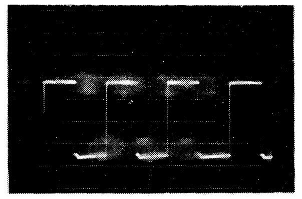
IC501 ⑧ REC
0.2V/5ms.div.



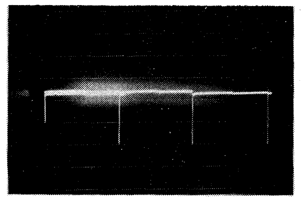
IC501 ⑫ REC
0.2/10ms.div.



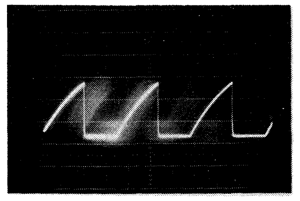
IC501 ㉒ REC
SP 0.5V/2ms.div.



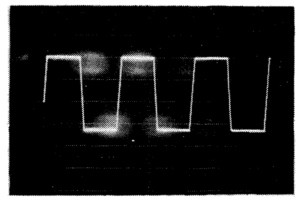
IC501 ㉕ REC
0.2V/10ms.div



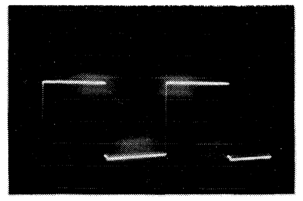
IC501 ⑩ PB
2V/10ms.div.



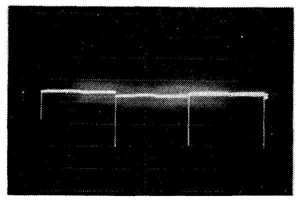
IC501 ⑭ REC
2V/10ms.div.



IC501 ㉒ REC
LP 0.5V/2ms.div.

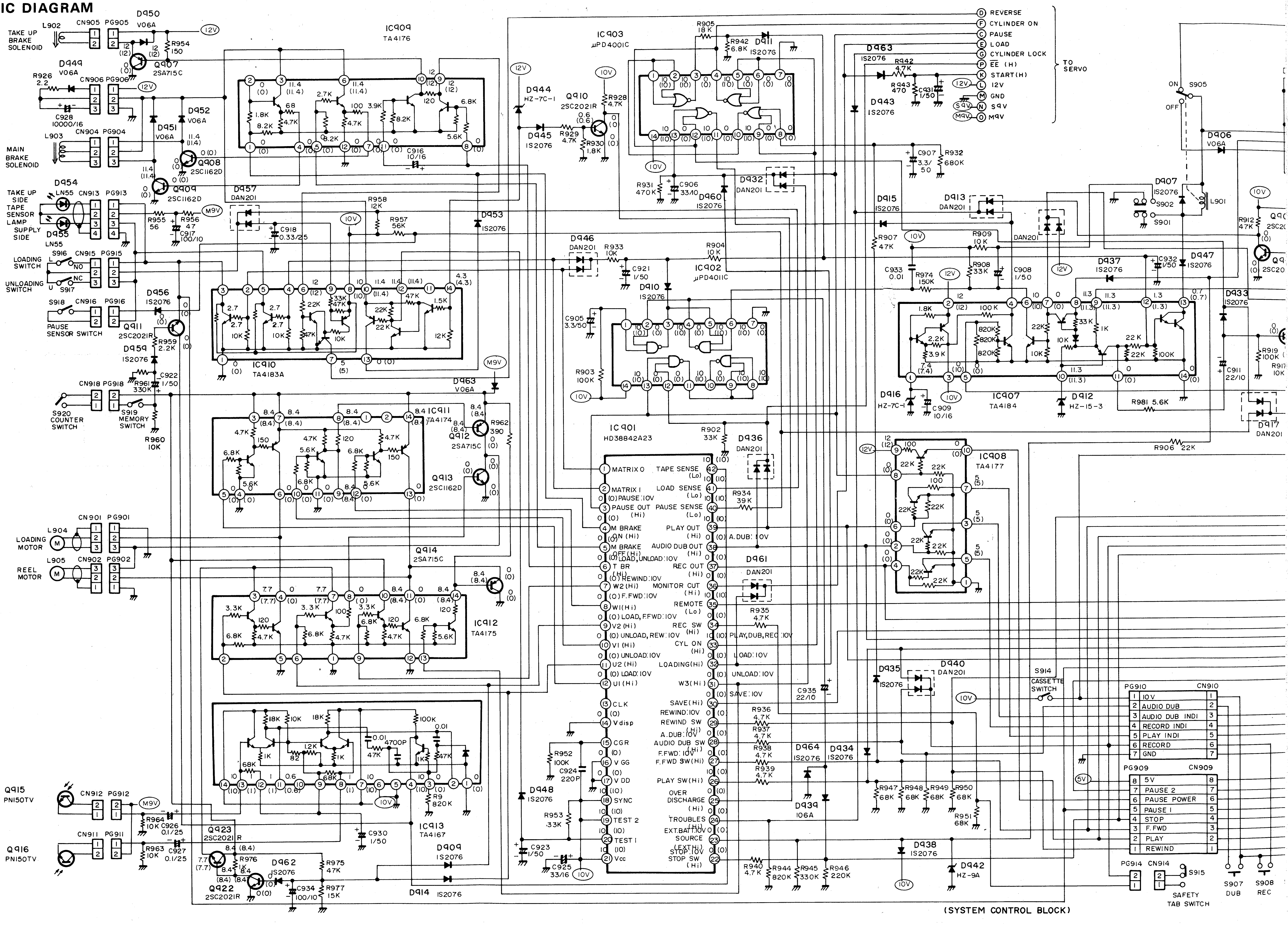


IC501 ㉖ REC
0.2V/10ms.div.

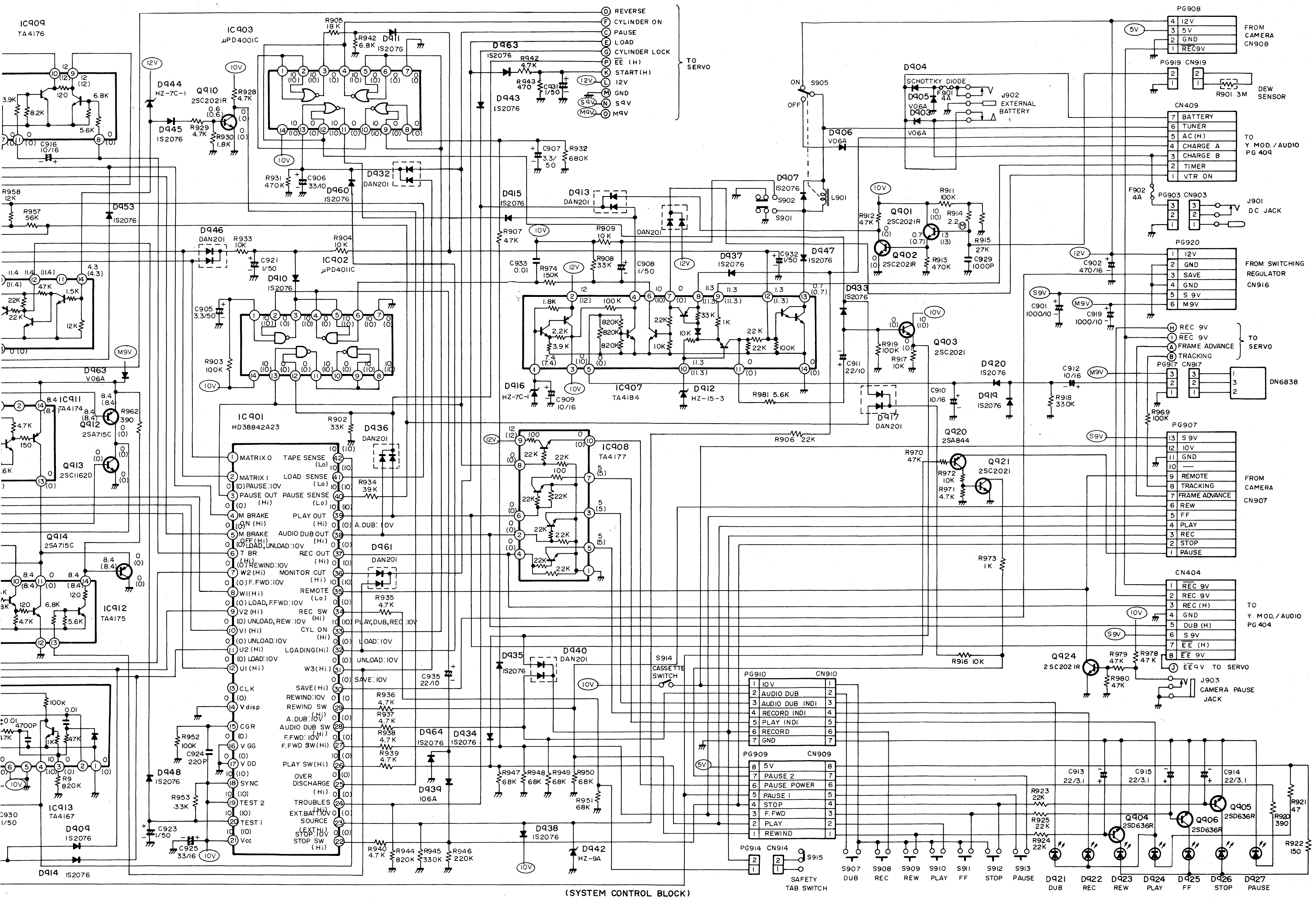


Continued to page 71.

SYSTEM CONTROL SCHEMATIC DIAGRAM

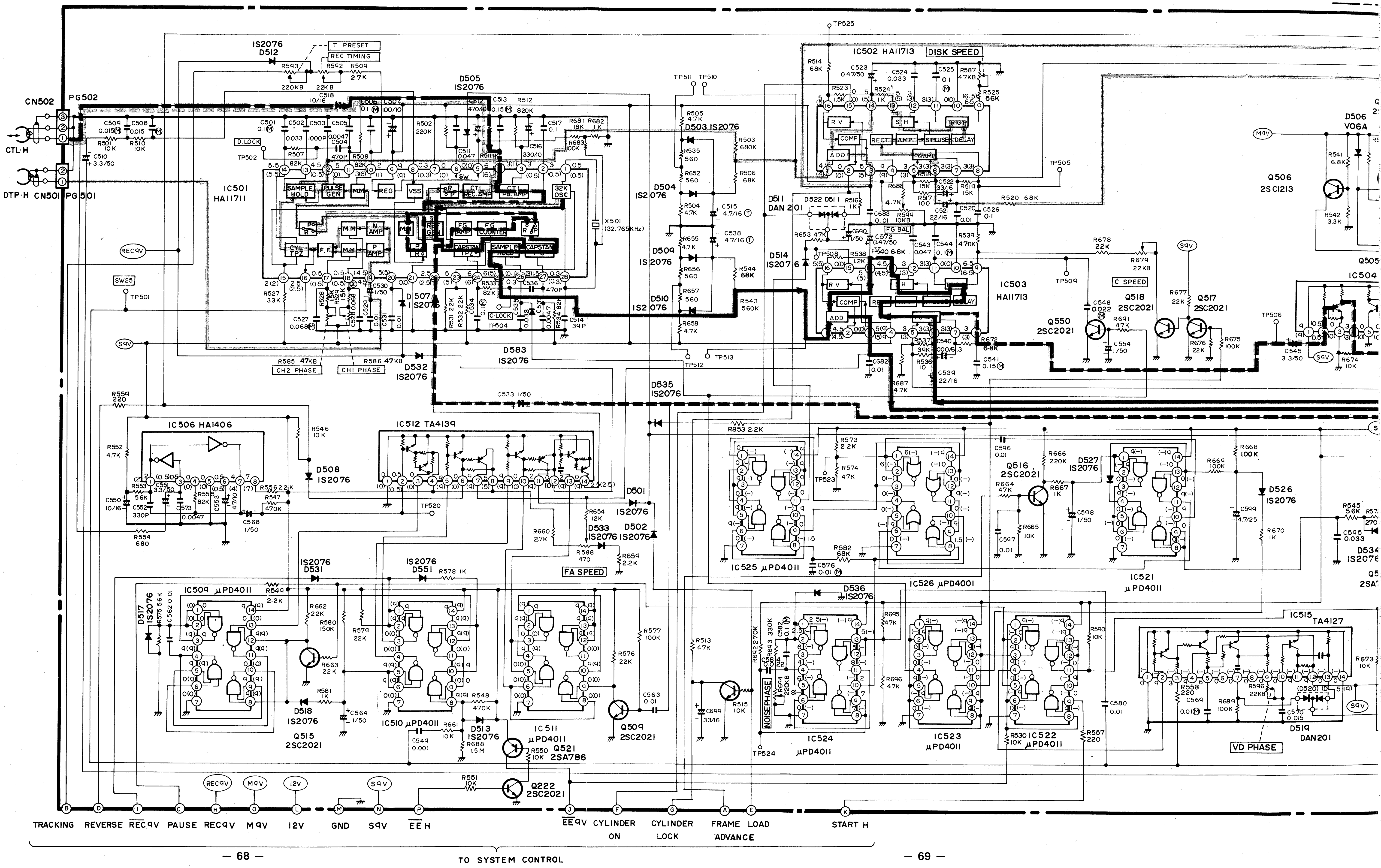

TAKE UP BRAKE SOLENOID
L902
CN905
PG905
D950 V06A
R954 150
Q907 2SA715C
D949 V06A
R926 2.2
CN906
PG906
C928 10000/16
D951 V06A
D952 V06A
L903
CN904
PG904
MAIN BRAKE SOLENOID
Q908 2SC1162D
Q909 2SC1162D
TAKE UP SIDE TAPE SENSOR LAMP SUPPLY SIDE
D954 LN55
D955 LN55
CN913
PG913
R955 56
R956 47
C917 100/10
D957 DAN201
C918 0.33/25
R958 12K
R957 56K
LOADING SWITCH
S916
CN915
PG915
UNLOADING SWITCH
S917
S918
CN916
PG916
PAUSE SENSOR SWITCH
D956 1S2076
Q911 2SC2021R
R959 2.2K
D959 1S2076
C922 1/50
R961 330K
CN918
PG918
S920 COUNTER SWITCH
S919 MEMORY SWITCH
R960 10K
IC909 TA4176
C916 10/16
IC910 TA4183A
D953 1S2076
D963 V06A
IC911 TA4174
R962 390
Q912 2SA715C
Q913 2SC1162D
LOADING MOTOR
L904
CN901
PG901
REEL MOTOR
L905
CN902
PG902
Q914 2SA715C
IC912 TA4175
IC913 TA4167
R9 820K
C930 1/50
D909 1S2076
D914 1S2076
Q915 PN150TV
CN912
PG912
R964 10K
C926 0.1/25
Q916 PN150TV
CN911
PG911
R963 10K
C927 0.1/25
Q923 2SC2021R
Q922 2SC2021R
R976 1K
D962 1S2076
C934 100/10
R975 47K
R977 15K
D944 HZ-7C-1
D945 1S2076
R929 4.7K
Q910 2SC2021R
R928 4.7K
R930 1.8K
IC903 µPD4001C
R905 18K
R942 6.8K
D911 1S2076
R931 470K
C906 33/10
D960 1S2076
D932 DAN201
D946 DAN201
R933 10K
C921 1/50
R904 10K
IC902 µPD4011C
D910 1S2076
C905 3.3/50
R903 100K
IC901 HD38842A23
R902 33K
D936 DAN201
R934 39K
D961 DAN201
R935 4.7K
C935 22/10
R936 4.7K
R937 4.7K
R938 4.7K
R939 4.7K
R940 4.7K
R944 820K
R945 330K
R946 220K
R952 100K
C924 220P
D948 1S2076
R953 33K
C923 1/50
C925 33/16
D964 1S2076
D934 1S2076
D939 106A
1 MATRIX 0
2 MATRIX 1
3 PAUSE OUT (Hi)
4 M BRAKE ON (Hi)
5 M BRAKE OFF (Hi)
6 T BR
7 W2 (Hi)
8 W1 (Hi)
9 V2 (Hi)
10 V1 (Hi)
11 U2 (Hi)
12 U1 (Hi)
13 CLK
14 Vdisp
15 CGR
16 V GG
17 V DD
18 SYNC
19 TEST 2
20 TEST 1
21 Vcc
42 TAPE SENSE (Lo)
41 LOAD SENSE (Lo)
40 PAUSE SENSE (Lo)
39 PLAY OUT (Hi)
38 AUDIO DUB OUT (Hi)
37 REC OUT (Hi)
36 MONITOR CUT (Hi)
35 REMOTE (Lo)
34 REC SW (Hi)
33 CYL ON (Hi)
32 LOADING (Hi)
31 W3 (Hi)
30 SAVE (Hi)
29 REWIND SW (Hi)
28 AUDIO DUB SW (Hi)
27 F.FWD SW (Hi)
26 PLAY SW (Hi)
25 OVER DISCHARGE (Hi)
24 TROUBLES (Hi)
23 EXT.BATT SOURCE (Hi)
22 STOP SW (Hi)
D REVERSE
F CYLINDER ON
C PAUSE
E LOAD
G CYLINDER LOCK
P EE (H)
K START (H)
L 12V
M GND
N S9V
O M9V
TO SERVO
D963 1S2076
R942 4.7K
R943 470
C931 1/50
D943 1S2076
C907 3.3/50
R932 680K
D915 1S2076
D913 DAN201
R907 47K
R909 10K
R908 33K
C908 1/50
C933 0.01
R974 150K
D937 1S2076
C932 1/50
D947 1S2076
IC907 TA4184
D916 HZ-7C-1
C909 10/16
D912 HZ-15-3
R981 5.6K
R906 22K
IC908 TA4177
D933 1S2076
C911 22/10
R919 100K
R917 10K
D917 DAN201
S905 ON OFF
D906 V06A
D907 1S2076
L901
S902
S901
R912 4.7K
D935 1S2076
D940 DAN201
S914 CASSETTE SWITCH
R947 68K
R948 68K
R949 68K
R950 68K
R951 68K
D938 1S2076
D942 HZ-9A
PG910 CN910
1 10V 1
2 AUDIO DUB 2
3 AUDIO DUB INDI 3
4 RECORD INDI 4
5 PLAY INDI 5
6 RECORD 6
7 GND 7
PG909 CN909
8 5V 8
7 PAUSE 2 7
6 PAUSE POWER 6
5 PAUSE 1 5
4 STOP 4
3 F.FWD 3
2 PLAY 2
1 REWIND 1
PG914 CN914
S915
SAFETY TAB SWITCH
S907 DUB
S908 REC

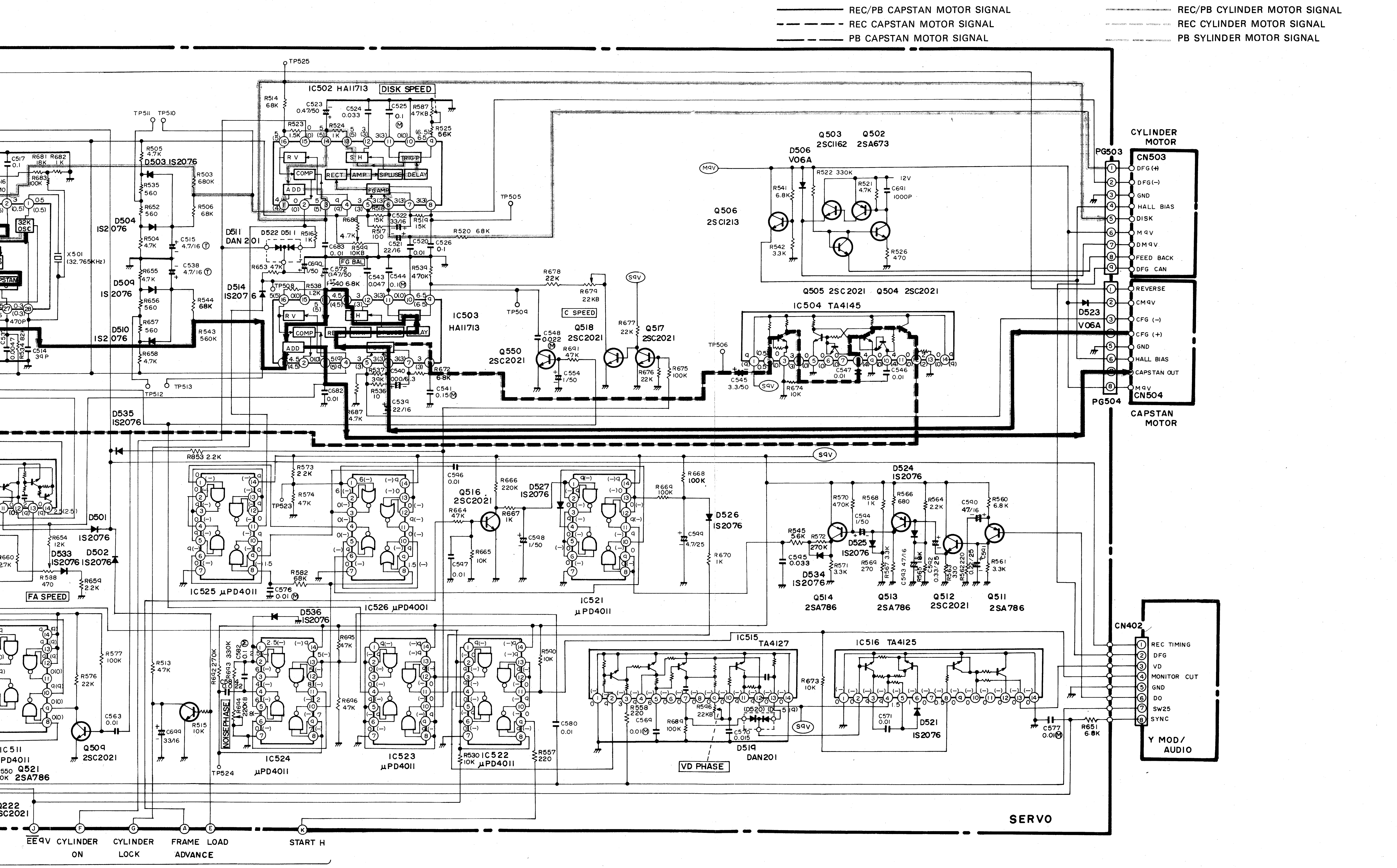
(SYSTEM CONTROL BLOCK)


IC901 HD38842A23
IC902 μPD4011C
IC903 μPD4001C
IC907 TA4184
IC908 TA4177
IC909 TA4176
IC911 TA4174
IC912 TA4175
IC913 TA4167
Q901 2SC2021R
Q902 2SC2021R
Q903 2SC2021
Q905 2SD636R
Q906 2SD636R
Q904 2SD636R
Q910 2SC2021R
Q912 2SA715C
Q913 2SC1162D
Q914 2SA715C
Q920 2SA844
Q921 2SC2021
Q924 2SC2021R
REVERSE
CYLINDER ON
PAUSE
LOAD
CYLINDER LOCK
EE (H)
START(H)
12V
GND
S9V
M9V
TO SERVO
MATRIX 0
MATRIX 1
PAUSE OUT
M BRAKE ON (Hi)
M BRAKE OFF (Hi)
T BR
W2 (Hi)
W1 (Hi)
V2 (Hi)
V1 (Hi)
U2 (Hi)
U1 (Hi)
CLK
Vdisp
CGR
V GG
V DD
SYNC
TEST 2
TEST 1
Vcc
TAPE SENSE (Lo)
LOAD SENSE (Lo)
PAUSE SENSE (Lo)
PLAY OUT
AUDIO DUB OUT (Hi)
REC OUT (Hi)
MONITOR CUT (Hi)
REMOTE (Lo)
REC SW (Hi)
CYL ON (Hi)
LOADING(Hi)
W3(Hi)
SAVE(Hi)
REWIND SW
AUDIO DUB SW
F.FWD SW(Hi)
PLAY SW(Hi)
OVER DISCHARGE (Hi)
TROUBLES
SOURCE (EXT.Hi)
STOP SW (Hi)
SCHOTTKY DIODE
J902 EXTERNAL BATTERY
J901 DC JACK
DEW SENSOR
R901 3M
PG908 — FROM CAMERA CN908: 4 12V, 3 5V, 2 GND, 1 REC9V
CN409 — TO Y MOD./AUDIO PG 409: 7 BATTERY, 6 TUNER, 5 AC (H), 4 CHARGE A, 3 CHARGE B, 2 TIMER, 1 VTR ON
PG920 — FROM SWITCHING REGULATOR CN916: 1 12V, 2 GND, 3 SAVE, 4 GND, 5 S 9V, 6 M9V
REC 9V
REC 9V
FRAME ADVANCE
TRACKING
TO SERVO
DN6838
PG907 — FROM CAMERA CN907: 13 S 9V, 12 10V, 11 GND, 10 —, 9 REMOTE, 8 TRACKING, 7 FRAME ADVANCE, 6 REW, 5 FF, 4 PLAY, 3 REC, 2 STOP, 1 PAUSE
CN404 — TO Y MOD./AUDIO PG 404: 1 REC 9V, 2 REC 9V, 3 REC (H), 4 GND, 5 DUB (H), 6 S 9V, 7 EE (H), 8 EE 9V
EE9V TO SERVO
J903 CAMERA PAUSE JACK
PG910 CN910: 1 10V, 2 AUDIO DUB, 3 AUDIO DUB INDI, 4 RECORD INDI, 5 PLAY INDI, 6 RECORD, 7 GND
PG909 CN909: 8 5V, 7 PAUSE 2, 6 PAUSE POWER, 5 PAUSE 1, 4 STOP, 3 F.FWD, 2 PLAY, 1 REWIND
CASSETTE SWITCH
S914
S915 SAFETY TAB SWITCH
S905 ON OFF
S907 DUB
S908 REC
S909 REW
S910 PLAY
S911 FF
S912 STOP
S913 PAUSE
D921 DUB
D922 REC
D923 REW
D924 PLAY
D925 FF
D926 STOP
D927 PAUSE

(SYSTEM CONTROL BLOCK)

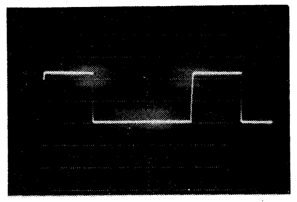
SERVO SCHEMATIC DIAGRAM


CN502
PG502
CTL·H
DTP·H
CN501
PG501
IC501
HA11711
IC502 HA11713
DISK SPEED
IC503
HA11713
IC504
D505
IS2076
D512
IS2076
T PRESET
REC TIMING
D.LOCK
TP502
C·LOCK
TP504
X501
(32.765KHz)
SAMPLE HOLD
PULSE GEN
M.M
REG
VSS
CTL REC.AMP
CTL PB.AMP
32K OSC
CYL TPZ
F.F.
N AMP
P AMP
FG AMP
FG COUNTER
CAPSTAN
SAMPLE HOLD
R V
S H
TRIG.P
COMP
RECT
AMP
S.PLUSE
DELAY
ADD
FG AMP
FG BAL
D503 IS2076
D504 IS2076
D509 IS2076
D510 IS2076
D511 DAN201
D514 IS2076
D522 D511
TP511
TP510
TP525
TP505
TP506
TP508
TP509
TP512
TP513
D506 V06A
Q506 2SC1213
Q505
C SPEED
Q518 2SC2021
Q517 2SC2021
Q550 2SC2021
M9V
S9V
REC9V
SW25
TP501
CH2 PHASE
CH1 PHASE
D532 IS2076
D583 IS2076
D507 IS2076
D535 IS2076
IC506 HA1406
D508 IS2076
IC512 TA4139
TP520
D501 IS2076
D502 IS2076
D533 IS2076
FA SPEED
IC509 μPD4011
D517 IS2076
D531 IS2076
D551 IS2076
D518 IS2076
Q515 2SC2021
IC510 μPD4011
D513 IS2076
IC511 μPD4011
Q521 2SA786
Q509 2SC2021
Q222 2SC2021
IC525 μPD4011
IC526 μPD4001
TP523
Q516 2SC2021
D527 IS2076
IC521 μPD4011
D526 IS2076
D534 IS2076
D536 IS2076
NOISEPHASE
IC524 μPD4011
TP524
IC523 μPD4011
IC522 μPD4011
IC515 TA4127
D519 DAN201
VD PHASE
TRACKING
REVERSE
REC9V
PAUSE
REC9V
M9V
12V
GND
S9V
EEH
EE9V
CYLINDER ON
CYLINDER LOCK
FRAME ADVANCE
LOAD
START H
TO SYSTEM CONTROL

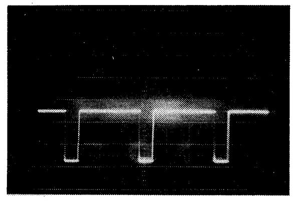

REC/PB CAPSTAN MOTOR SIGNAL
REC CAPSTAN MOTOR SIGNAL
PB CAPSTAN MOTOR SIGNAL
REC/PB CYLINDER MOTOR SIGNAL
REC CYLINDER MOTOR SIGNAL
PB SYLINDER MOTOR SIGNAL
IC502 HA11713
DISK SPEED
IC503 HA11713
IC504 TA4145
IC515 TA4127
IC516 TA4125
IC521 µPD4011
IC522 µPD4011
IC523 µPD4011
IC524 µPD4011
IC525 µPD4011
IC526 µPD4001
IC511 µPD4011
Q502 2SA673
Q503 2SC1162
Q504 2SC2021
Q505 2SC2021
Q506 2SC1213
Q509 2SC2021
Q511 2SA786
Q512 2SC2021
Q513 2SA786
Q514 2SA786
Q516 2SC2021
Q517 2SC2021
Q518 2SC2021
Q521 2SA786
Q550 2SC2021
D503 1S2076
D504 1S2076
D506 V06A
D509 1S2076
D510 1S2076
D511 DAN201
D514 1S2076
D519 DAN201
D523 V06A
D524 1S2076
D535 1S2076
D536 1S2076
X501 (32.768KHz)
32K OSC
C SPEED
FG BAL
FA SPEED
NOISEPHASE
VD PHASE
CYLINDER MOTOR
PG503
CN503
DFG(+)
DFG(−)
GND
HALL BIAS
DISK
M9V
DM9V
FEED BACK
DFG CAN
REVERSE
CM9V
CFG (−)
CFG (+)
GND
HALL BIAS
CAPSTAN OUT
M9V
CN504
PG504
CAPSTAN MOTOR
CN402
REC TIMING
DFG
VD
MONITOR CUT
GND
DO
SW25
SYNC
Y MOD/ AUDIO
TP505
TP506
TP509
TP510
TP511
TP512
TP513
TP523
TP524
TP525
SERVO
EE9V
CYLINDER ON
CYLINDER LOCK
FRAME ADVANCE
LOAD
START H
NTROL

Continued from page 64.

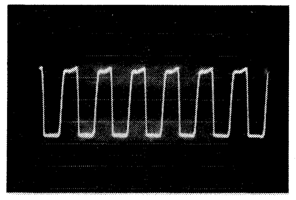
IC501 ㉗ REC
2V/5ms.div.



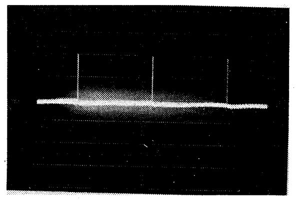
IC501 ㉗ PB
2V/10ms.div.



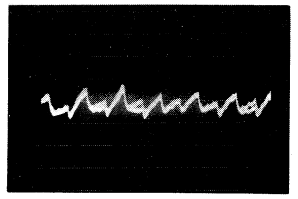
IC501 ㉘ REC
0.2V/20μs.div.



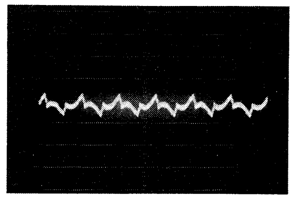
IC502 ① PB/REC
50mV/10ms.div.



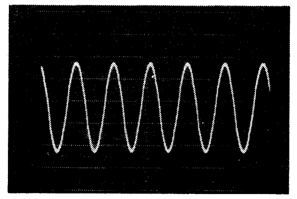
IC502 ③ PB/REC
50mV/5ms.div.



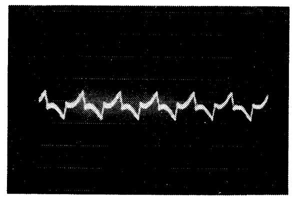
IC502 ⑤ PB/REC
50mV/5ms.div.



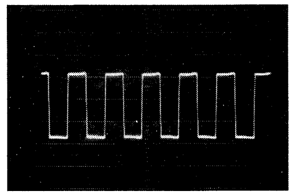
IC502 ⑥ PB/REC
100mV/5ms.div.



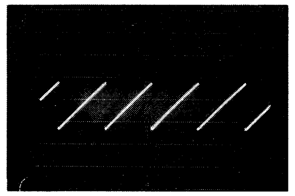
IC502 ⑦ PB/REC
50mV/5ms.div.



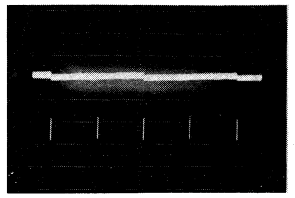
IC502 ⑧ PB/REC
50mV/5ms.div.



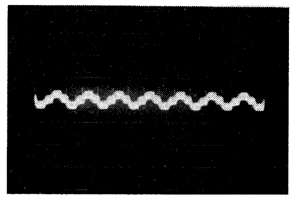
IC502 ⑪ PB/REC
2V/2ms.div.



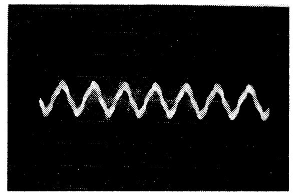
IC502 ⑫ PB/REC
50mV/2ms.div.



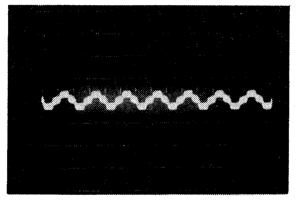
IC503 ⑤ PB/REC
50mV/1ms.div.



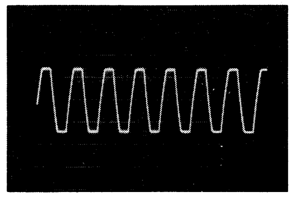
IC503 ⑥ PB/REC
50mV/1ms.div.



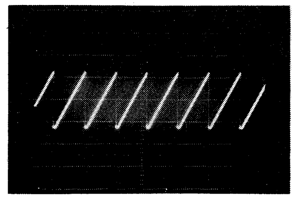
IC503 ⑦ PB/REC
50mV/1ms.div.



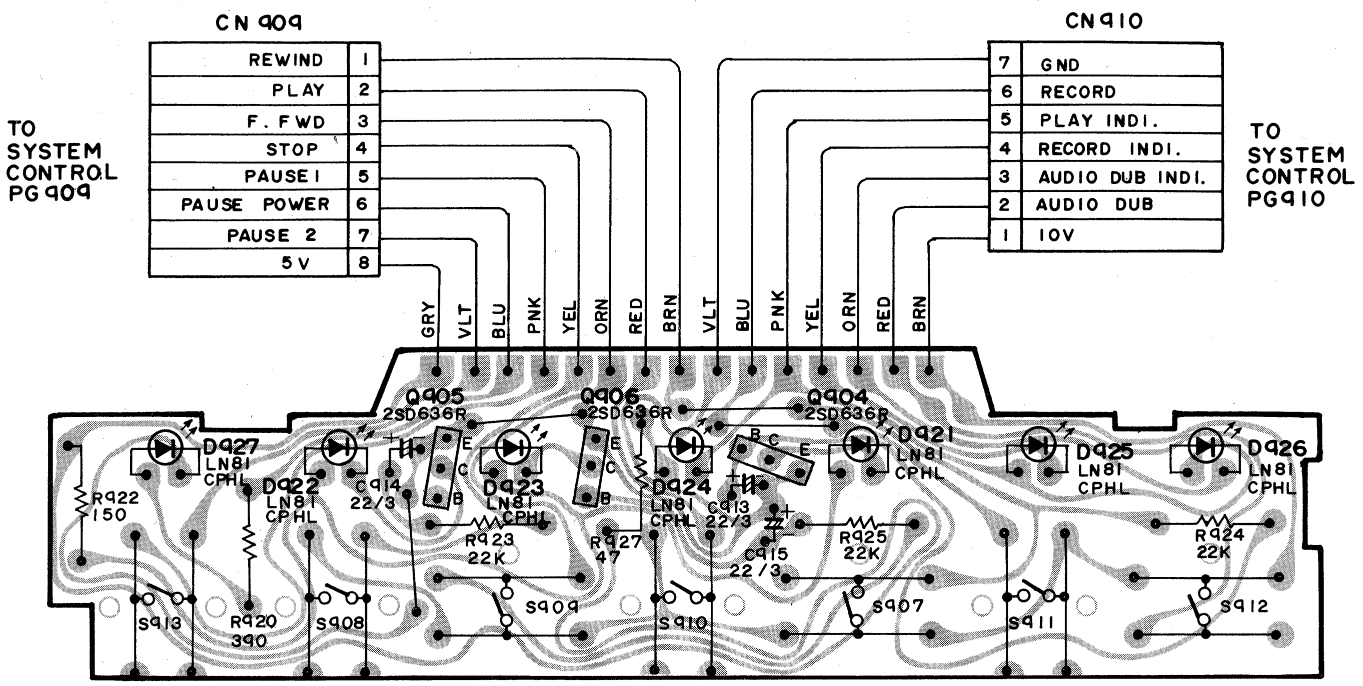
IC503 ⑧ PB/REC
0.5V/ms.div.



IC503 ⑪ PB/REC
2V/0.5ms.div.



SWITCH CIRCUIT BOARD DIAGRAM


CN909
REWIND 1
PLAY 2
F.FWD 3
STOP 4
PAUSE I 5
PAUSE POWER 6
PAUSE 2 7
5V 8
TO SYSTEM CONTROL PG909
CN910
7 GND
6 RECORD
5 PLAY INDI.
4 RECORD INDI.
3 AUDIO DUB INDI.
2 AUDIO DUB
1 10V
TO SYSTEM CONTROL PG910
GRY
VLT
BLU
PNK
YEL
ORN
RED
BRN
VLT
BLU
PNK
YEL
ORN
RED
BRN
Q405 2SD636R
Q406 2SD636R
Q404 2SD636R
D927 LN81 CPHL
D922 LN81 CPHL
D923 LN81 CPHL
D924 LN81 CPHL
D921 LN81 CPHL
D925 LN81 CPHL
D926 LN81 CPHL
E
C
B
R922 150
C914 22/3
R923 22K
R927 47
C913 22/3
C915 22/3
R925 22K
R924 22K
R920 390
S913
S908
S909
S910
S907
S911
S912

SERVO/SYSTEM CONTROL CIRCUIT BOARD DIAGRAM

IC501

28	0.3(0.3)	1	0.5(0.5)
27	1.5(3)	2	3(0.5)
26	0.3(0.1)	3	3(0.5)
25	6(5)	4	3(1)
24	6(6)	5	6(6)
23	5(5)	6	0(0)
22	2.5(2.5)	7	0(0)
21	0(0)	8	0.3(0.3)
20	5(9)	9	9(9)
19	4.5(4.5)	10	2(1)
18	0.5(0.5)	11	3(6)
17	0.5(0.5)	12	5(9)
16	2.5(2.5)	13	4.5(0.5)
15	2(2)	14	5.5(5.5)

IC502

8	3(3)	9	6.5(6.5)
7	3(3)	10	0(0)
6	3(3)	11	3(3)
5	3(3)	12	3(3)
4	9(9)	13	5(5)
3	5(5)	14	5(5)
2	0(0)	15	0(0)
1	4(4)	16	5(5)

IC503

8	3(3)	9	6.5(6.5)
7	3(3)	10	0(0)
6	3(3)	11	3(3)
5	3(3)	12	3(3)
4	9(9)	13	4.5(4.5)
3	5(5)	14	5(5)
2	0(0)	15	0(0)
1	4.5(4.5)	16	5(5)

IC506

1	2(2)
2	—
3	0.5(0.5)
4	0(0)
5	0(0)
6	0.5(0.5)
7	4(4)
8	7(7)

IC504

14	13	12	11	10	9	8
9(9)	0(0)	2(2)	0(0)	4(4)	0(0)	4(4)
7	6	5	4	3	2	1
0(0)	0(0)	0(0)	3(3)	0(0)	0.5(0.5)	9(9)

IC509

7	0(0)	8	9(9)
6	0(0)	9	9(9)
5	9(9)	10	0(0)
4	9(9)	11	9(9)
3	9(9)	12	9(9)
2	0(0)	13	0(0)
1	0(0)	14	9(9)

IC510

7	0(0)	8	9(9)
6	9(9)	9	0(0)
5	9(9)	10	9(9)
4	0(0)	11	0(0)
3	0(0)	12	9(9)
2	9(9)	13	9(9)
1	9(9)	14	9(9)

IC511

7	0(0)	8	0(0)
6	0(0)	9	0(0)
5	0(0)	10	9(9)
4	9(9)	11	0(0)
3	0(0)	12	9(9)
2	9(9)	13	9(9)
1	9(9)	14	9(9)

IC512

14	13	12	11	10	9	8	7	6	5	4	3	2	1
2.5(2.5)	0(9)	2(9)	0(0)	2(9)	0(0)	9(9)	5(5)	9(9)	0(0)	9(9)	0(0)	0.5(0.5)	0(0)

IC515

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(–)	0(–)	9(–)	9(–)	0(–)	0(–)	0(–)	0(–)	0(–)	6(–)	9(–)	3(–)	9(–)	0(–)

IC516

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(–)	0(–)	0(–)	0(–)	0(–)	0(–)	0.5(–)	0(–)	1(–)	1.5(–)	9(–)	9(–)	0(–)	0(–)

IC521

7	0(–)	8	0(–)
6	0(–)	9	0(–)
5	0(–)	10	9(–)
4	9(–)	11	9(–)
3	0(–)	12	0(–)
2	9(–)	13	0(–)
1	9(–)	14	9(–)

IC522

7	0(–)	8	9(–)
6	9(–)	9	0(–)
5	0(–)	10	9(–)
4	9(–)	11	0(–)
3	9(–)	12	9(–)
2	0(–)	13	9(–)
1	9(–)	14	9(–)

IC523

7	0(–)	8	9(–)
6	9(–)	9	9(–)
5	9(–)	10	0(–)
4	0(–)	11	0(–)
3	0(–)	12	9(–)
2	9(–)	13	9(–)
1	9(–)	14	9(–)

IC524

1	2	3	4	5	6	7
2.5(–)	2.5(–)	6(–)	4(–)	6(–)	8(–)	0(–)
14	13	12	11	10	9	8
9(–)	5(–)	5(–)	8(–)	2(–)	7(–)	7(–)

IC525

7	0(–)	8	1.5(–)
6	9(–)	9	0(–)
5	9(–)	10	9(–)
4	0(–)	11	0(–)
3	9(–)	12	9(–)
2	0(–)	13	9(–)
1	0(–)	14	9(–)

IC526

7	0(–)	8	1.5(–)
6	9(–)	9	9(–)
5	0(–)	10	0(–)
4	0(–)	11	9(–)
3	0(–)	12	0(–)
2	6(–)	13	0(–)
1	6(–)	14	9(–)

Q501

B	0(–)
C	0(–)
E	0(–)

Q511

B	0.5(–)
C	1.5(–)
E	7(–)

Q521

B	8.5(9)
C	9(0)
E	9(9)

Q502

B	12(–)
C	1(–)
E	12(–)

Q512

B	1.5(–)
C	9(–)
E	1(–)

Q522

B	0.6(0)
C	0(9)
E	0(0)

Q503

B	1(–)
C	12(–)
E	9(–)

Q513

B	7.7(–)
C	2(–)
E	9(–)

Q504

B	0.6(–)
C	12(–)
E	0(–)

Q514

B	9(–)
C	0.5(–)
E	9(–)

Q550

B	0(–)
C	2(–)
E	0(–)

Q505

B	0.6(–)
C	0.6(–)
E	0(–)

Q515

B	0(–)
C	9(–)
E	0(–)

Q506

B	3(–)
C	9(–)
E	2.5(–)

Q516

B	0(–)
C	8(–)
E	0(–)

Q517

B	0(–)
C	0.6(–)
E	0(–)

Q509

B	0.6(–)
C	0(0)
E	0(0)

Q518

B	0.6(–)
C	0(0)
E	0(0)

IC901

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
0(0)	0(0)	0(0)	0(0)	10(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	10(10)	0(0)	10(10)	0(0)	0(10)	0(0)	10(0)	10(10)	10(10)	10(10)
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
10(10)	10(10)	10(10)	10(10)	0(0)	0(0)	—	0(0)	—	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	—	—

IC902

8	9	10	11	12	13	14
10(10)	10(10)	0(0)	10(10)	0(0)	0(0)	10(10)
7	6	5	4	3	2	1
0(0)	10(10)	10(10)	0(0)	0(0)	0(0)	10(10)

IC903

14	10(10)	1	10(10)
13	0(0)	2	10(10)
12	10(10)	3	0(0)
11	0(0)	4	10(10)
10	10(10)	5	0(0)
9	0(0)	6	0(0)
8	0(0)	7	0(0)

IC907

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(0)	0.7(0.7)	1.3(1.3)	0(0)	11.3(11.3)	11.3(11.3)	11.3(11.3)	0(0)	10(10)	0(0)	—	0(10)	12(12)	7.4(7.4)

IC908

10	9	8	7	6	5	4	3	2	1
0(0)	12(12)	0(0)	5(5)	0(0)	5(5)	0(0)	5(5)	0(0)	0(0)

IC909

1	0(0)	7	0(0)
2	0(0)	8	0(0)
3	11.4(11.4)	9	12(12)
4	0(0)	10	12(12)
5	0(0)	11	0(0)
6	11.4(11.4)	12	0(0)

IC911

14	8.4(8.4)	7	8.4(8.4)
13	0(0)	6	0(0)
12	0(0)	5	0(0)
11	0(0)	4	0(0)
10	0(0)	3	8.4(8.4)
9	8.4(8.4)	2	—
8	8.4(8.4)	1	—

IC912

14	8.4(8.4)	7	7.7(7.7)
13	0(0)	6	0(0)
12	0(0)	5	0(0)
11	0(0)	4	0(0)
10	8.4(8.4)	3	7.7(7.7)
9	0(0)	2	0(0)
8	0(0)	1	0(0)

IC910

1	2	3	4	5	6	7	8	9	10	11	12	13	14
0(0)	—	0(0)	—	—	12(12)	5(5)	10(10)	—	11.4(11.4)	—	11.4(11.4)	0(0)	4.3(4.3)

IC913

14	13	12	11	10	9	8	7	6	5	4	3	2	1
10(10)	1(1)	1(1)	0.6(0.6)	—	1(1)	1(1)	10(10)	—	—	10(10)	0(0)	—	0(0)

Q901

B	1.3(1.3)
C	10(10)
E	0.7(0.7)

Q909

B	0(0)
C	11.4(11.4)
E	0(0)

Q920

B	9(9)
C	0(0)
E	0(0)

Q902

B	0.7(0.7)
C	0(0)
E	0(0)

Q910

B	0.6(0.6)
C	0(0)
E	0(0)

Q921

B	0(0)
C	9(9)
E	0(0)

Q903

B	0(0)
C	10(10)
E	0(0)

Q911

B	0(0)
C	0(0)
E	0(0)

Q922

B	0(0)
C	8.4(8.4)
E	0(0)

Q904

B	0(0)
C	5(5)
E	0(0)

Q912

B	8.4(8.4)
C	0(0)
E	8.4(8.4)

Q923

B	8.4(8.4)
C	8.4(8.4)
E	7.7(7.7)

Q905

B	0(0)
C	5(5)
E	0(0)

Q913

B	0(0)
C	0(0)
E	0(0)

Q924

B	0(0)
C	10(10)
E	0(0)

Q906

B	0(0)
C	5(5)
E	0(0)

Q914

B	8.4(8.4)
C	0(0)
E	0(0)

Q907

B	12(12)
C	0(0)
E	12(12)

Q915

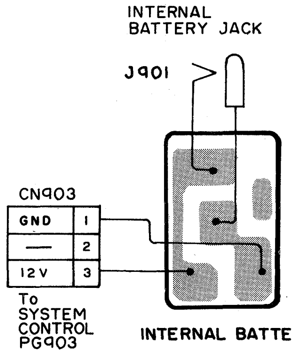
B	—
C	9(9)
E	0(0)

Q908

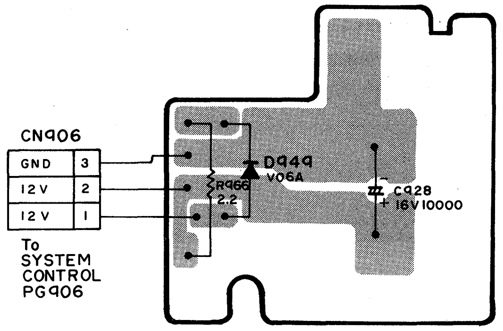
B	0(0)
C	11.4(11.4)
E	0(0)

Q916

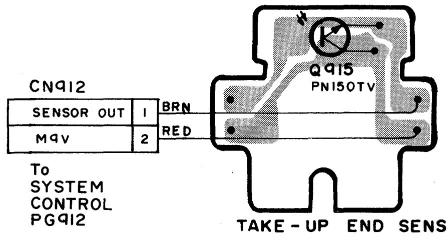
B	—
C	9(9)
E	0(0)


INTERNAL BATTERY JACK
J901
CN903
GND 1
— 2
12V 3
To SYSTEM CONTROL PG903

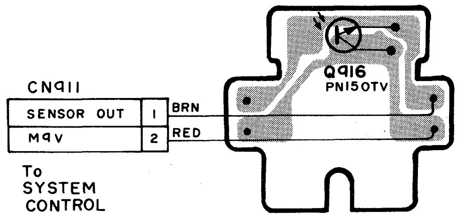
INTERNAL BATTERY JACK P.C.B


CN906
GND 3
12V 2
12V 1
To SYSTEM CONTROL PG906
D949 V06A
R966 2.2
C928 16V 10000

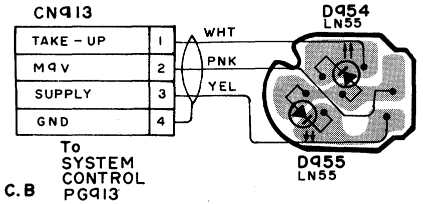
CAPACITOR P.C.B


CN912
SENSOR OUT 1
M9V 2
BRN
RED
Q915 PN150TV
To SYSTEM CONTROL PG912

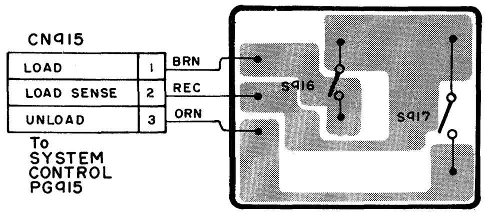
TAKE-UP END SENSOR


CN911
SENSOR OUT 1
M9V 2
BRN
RED
Q916 PN150TV
To SYSTEM CONTROL PG911

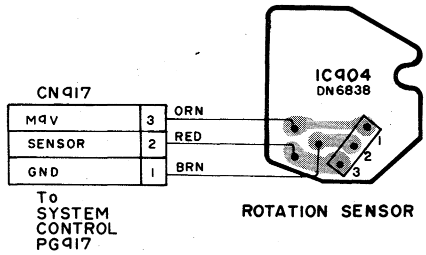
SUPPLY END SENSOR P.C.B


CN913
TAKE-UP 1
M9V 2
SUPPLY 3
GND 4
WHT
PNK
YEL
D954 LN55
D955 LN55
To SYSTEM CONTROL PG913

TAPE SENSOR LAMP P.C.B


CN915
LOAD 1
LOAD SENSE 2
UNLOAD 3
BRN
REC
ORN
S916
S917
To SYSTEM CONTROL PG915

LOADING SW P.C.B


CN917
M9V 3
SENSOR 2
GND 1
ORN
RED
BRN
IC904 DN6838
1
2
3
To SYSTEM CONTROL PG917

ROTATION SENSOR P.C.B

SERVO/SYSTEM CONTROL CIRCUIT BOARD DIAGRAM

CN402

To AUDIO PG402

REC TIMING	1	BRN
DFG	2	RED
VD	3	ORN
MONITOR CUT	4	YEL
GND	5	PNK
DO	6	BLU
SW25	7	VLT
SYNC	8	GRY

CN404

To AUDIO PG404

$\overline{\text{REC}}$ 9V	1	BLU
REC 9V	2	BLK
REC	3	RED
GND	4	ORN
DUB	5	PNK
S9V	6	WHT
PB	7	YEL
PB9V	8	BRN

CN409

To AUDIO PG409

VTR ON	1	BRN
TIMER	2	RED
CHARGE B	3	ORN
CHARGE A	4	YEL
AC	5	PNK
TUNER	6	BLU
BATTERY	7	VLT

PG909

From SWITCH CN909

REWIND	1
PLAY	2
F.F	3
STOP	4
PAUSE 1	5
PAUSE POWER	6
PAUSE 2	7
5V	8

PG910

From SWITCH CN910

10V	1
AUDIO DUB	2
AUDIO DUB INDI.	3
RECORD INDI.	4
PLAY INDI.	5
RECORD	6
GND	7

PG911

From SUPPCY ENDSENSOR CN911

SENSOR	1
M9V	2

PG912

From TAKE-UP ENDSENSOR CN912

SENSOR	1
M9V	2

PG913

From TAPE ENDSENSOR CN913

TAKE-UP LED	1
M9V	2
SUPPLY LED	3
GND	4

PG914

From SAFTY TAB SW CN914

REC IN	1
RECORD	2

PG915

From LOADONG SW CN915

LOADING	1
LOAD SENSE	2
UNLOADING	3

PG916

From PAUSE SENSOR SW CN916

PAUSE	1
PAUSE	2

PG917

From ROTATION SENSOR CN917

GND	1
SENSOR	2
M9V	3

PG918

From COUNTER SW CN918

COUNTER	1
M9V	2

PG919

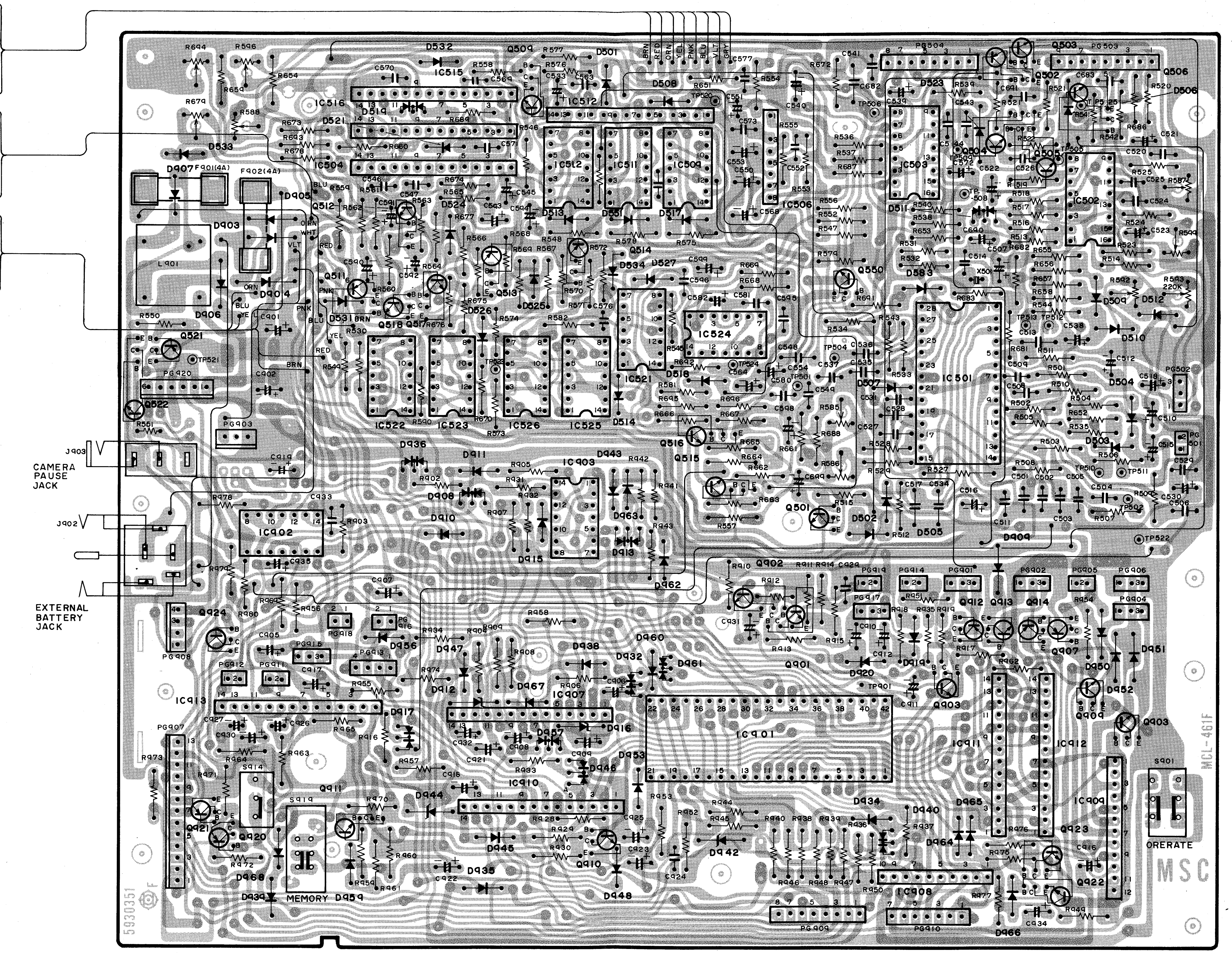
From DEW SENSOR CN919

GND	1
DEW	2

PG920

From SWITCHING REGULATOR CN920

12V	1
GND	2
SAVE	3
GND	4
S9V	5
M9V	6


CAMERA
PAUSE
JACK
EXTERNAL
BATTERY
JACK
J903
J902
IC501
IC901
MEMORY
ORERATE
MCL-461F
MSC
5930351

SERVO/SYSTEM CONTROL

PG501

1	DT PULSE
2	GND

From DT HEAD CN501

PG502

1	CTL PULSE
2	GND
3	GND

From CTL HEAD CN502

PG503

1	DFG (+)
2	DFG (−)
3	GND
4	HALL BIAS
5	DRUM OUT
6	M9V
7	12V OR 9V
8	FEED BACK
9	DFG CANSEL

From DRUM MOTOR CN503

PG504

1	REVERSE
2	9V
3	CFG (−)
4	CFG (+)
5	GND
6	HALL BIAS
7	CAPSTAN OUT
8	M9V

From CAPSTAN MOTOR CN504

PG901

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

From LOADING MOTOR CN901

PG902

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

From REEL MOTOR CN902

PG903

1	GND
2	——
3	12V

From DC JACK CN903

PG904

1	SOL. DRIVE
2	12V
3	SOL. DRIVE

From MAIN BRAKE CN904

PG905

1	12
2	SOL. DRIVE

From TAKE-UP BRAKE CN905

PG906

1	12V
2	12V
3	GND

From CAPACITOR CN906

PG907

1	PAUSE IN
2	STOP IN
3	REC IN
4	PLAY IN
5	FF IN
6	REW IN
7	FRAM ADVANCE
8	TRACKING
9	REMOTE
10	
11	GND
12	10V
13	S9V

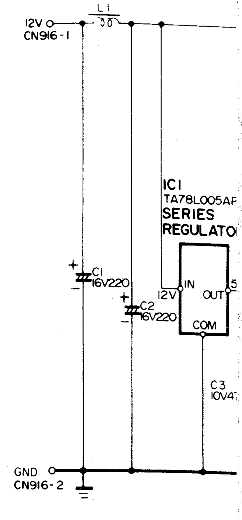
From CONNECTOR CN907

PG908

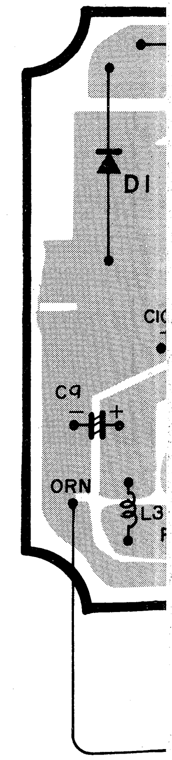
1	$\overline{\text{REC}}$ 9V
2	GND
3	5V
4	12V

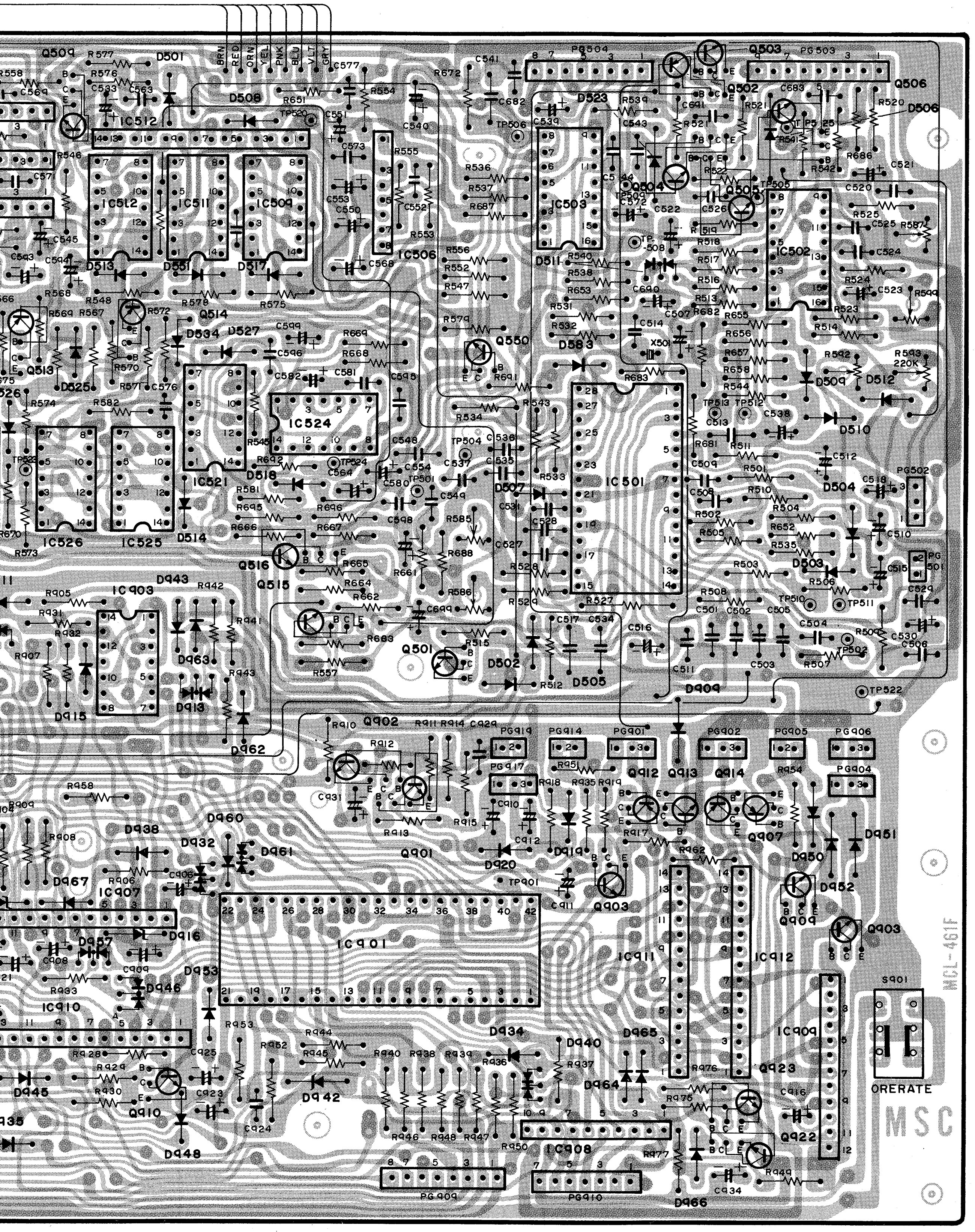
From CONNECTOR CN908

SWITCHIN


12V
CN916-1
L1
IC1
TA78L005AF
SERIES
REGULATO
IN
OUT
COM
12V
C1
16V220
C2
16V220
C3
10V47
GND
CN916-2

SWITCHIN


D1
C9
ORN
L3
CI


MGL-461F
MSC
ORERATE
S901

SERVO/SYSTEM CONTROL

PG501

1	DT PULSE
2	GND

From DT HEAD CN501

PG502

1	CTL PULSE
2	GND
3	GND

From CTL HEAD CN502

PG503

1	DFG (+)
2	DFG (−)
3	GND
4	HALL BIAS
5	DRUM OUT
6	M9V
7	12V OR 9V
8	FEED BACK
9	DFG CANSEL

From DRUM MOTOR CN503

PG504

1	REVERSE
2	9V
3	CFG (−)
4	CFG (+)
5	GND
6	HALL BIAS
7	CAPSTAN OUT
8	M9V

From CAPSTAN MOTOR CN504

PG901

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

From LOADING MOTOR CN901

PG902

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

From REEL MOTOR CN902

PG903

1	GND
2	——
3	12V

From DC JACK CN903

PG904

1	SOL. DRIVE
2	12V
3	SOL. DRIVE

From MAIN BRAKE CN904

PG905

1	12
2	SOL. DRIVE

From TAKE-UP BRAKE CN905

PG906

1	12V
2	12V
3	GND

From CAPACITOR CN906

PG907

1	PAUSE IN
2	STOP IN
3	REC IN
4	PLAY IN
5	FF IN
6	REW IN
7	FRAM ADVANCE
8	TRACKING
9	REMOTE
10	
11	GND
12	10V
13	S9V

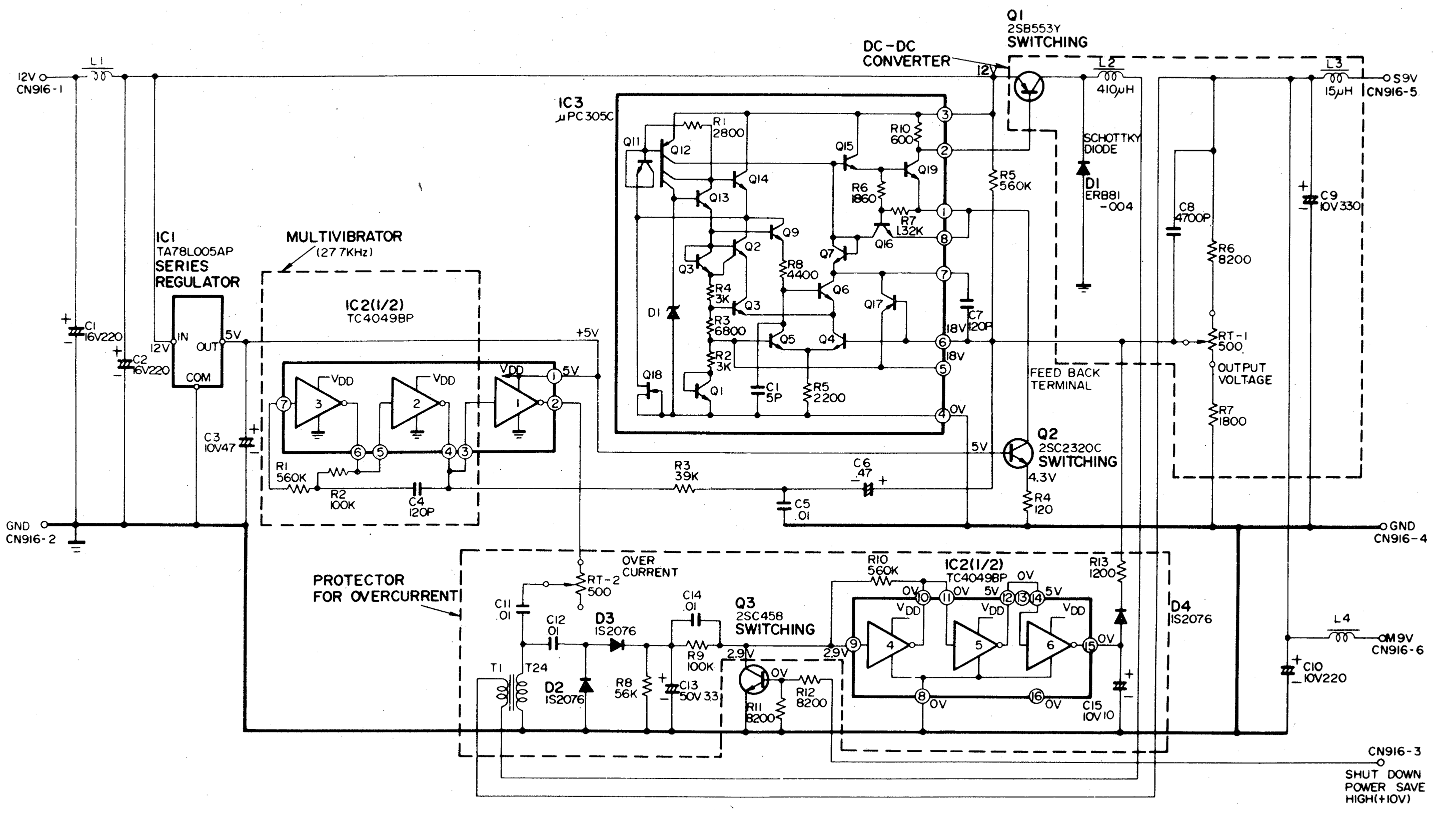
From CONNECTOR CN907

PG908

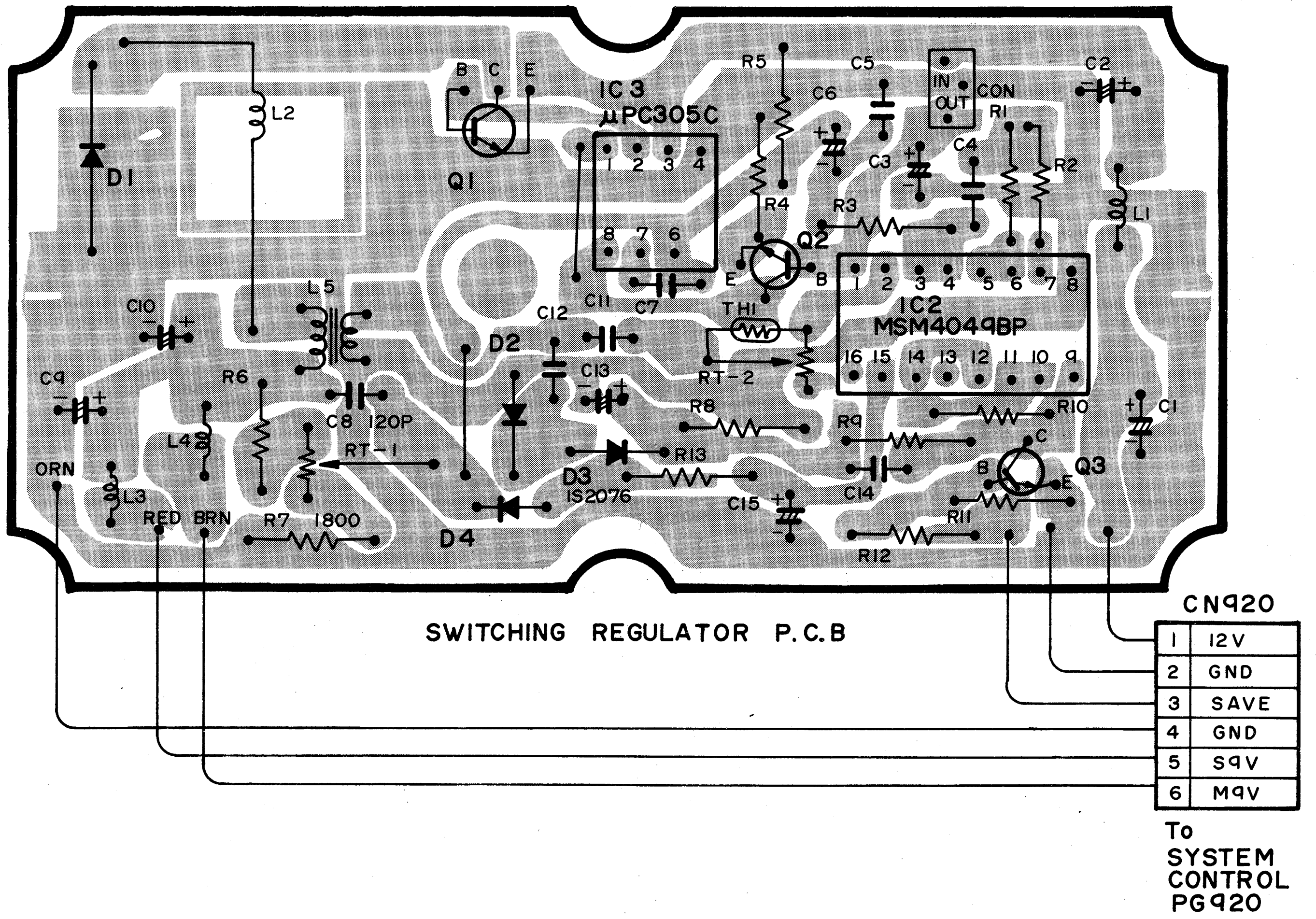
1	REC 9V
2	GND
3	5V
4	12V

From CONNECTOR CN908

SWITCHING REGULATOR SCHEMATIC DIAGRAM


12V CN916-1
GND CN916-2
L1
C1 16V220
C2 16V220
IC1 TA78L005AP SERIES REGULATOR
IN
OUT
COM
5V
MULTIVIBRATOR (27.7KHz)
IC2(1/2) TC4049BP
C3 10V47
R1 560K
R2 100K
C4 120P
+5V
IC3 μPC305C
DC-DC CONVERTER
Q1 2SB553Y SWITCHING
L2 410μH
SCHOTTKY DIODE
D1 ERB81-004
L3 15μH
S9V CN916-5
C9 10V330
C8 4700P
R6 8200
RT-1 500 OUTPUT VOLTAGE
R7 1800
FEED BACK TERMINAL
Q2 2SC2320C SWITCHING
R4 120
R3 39K
C6 47
C5 01
GND CN916-4
PROTECTOR FOR OVERCURRENT
OVER CURRENT RT-2 500
C11 01
C12 01
C14 01
D3 1S2076
Q3 2SC458 SWITCHING
T1 T24
D2 1S2076
R8 56K
C13 50V33
R9 100K
R11 8200
R12 8200
R10 560K
IC2(1/2) TC4049BP
R13 1200
D4 1S2076
C15 10V10
L4
M9V CN916-6
C10 10V220
CN916-3 SHUT DOWN POWER SAVE HIGH(+10V)

SWITCHING REGULATOR CIRCUIT BOARD DIAGRAM

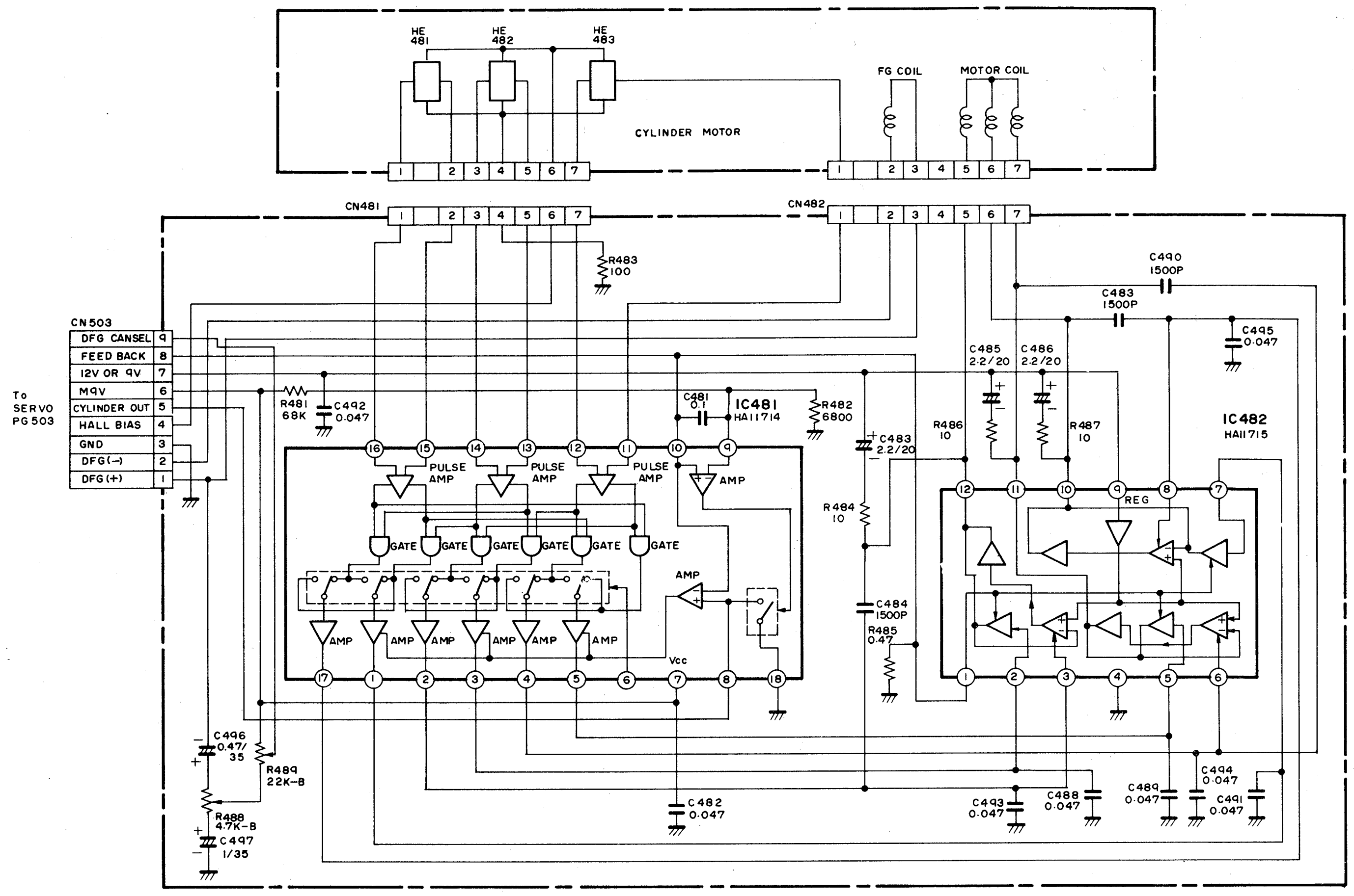

IC3 μPC305C
IC2 MSM4049BP
Q1
Q2
Q3
D1
D2
D3 1S2076
D4
L1
L2
L3
L4
L5
C8 120P
RT-1
RT-2
TH1
R7 1800
ORN
RED
BRN
SWITCHING REGULATOR P.C.B

CN920

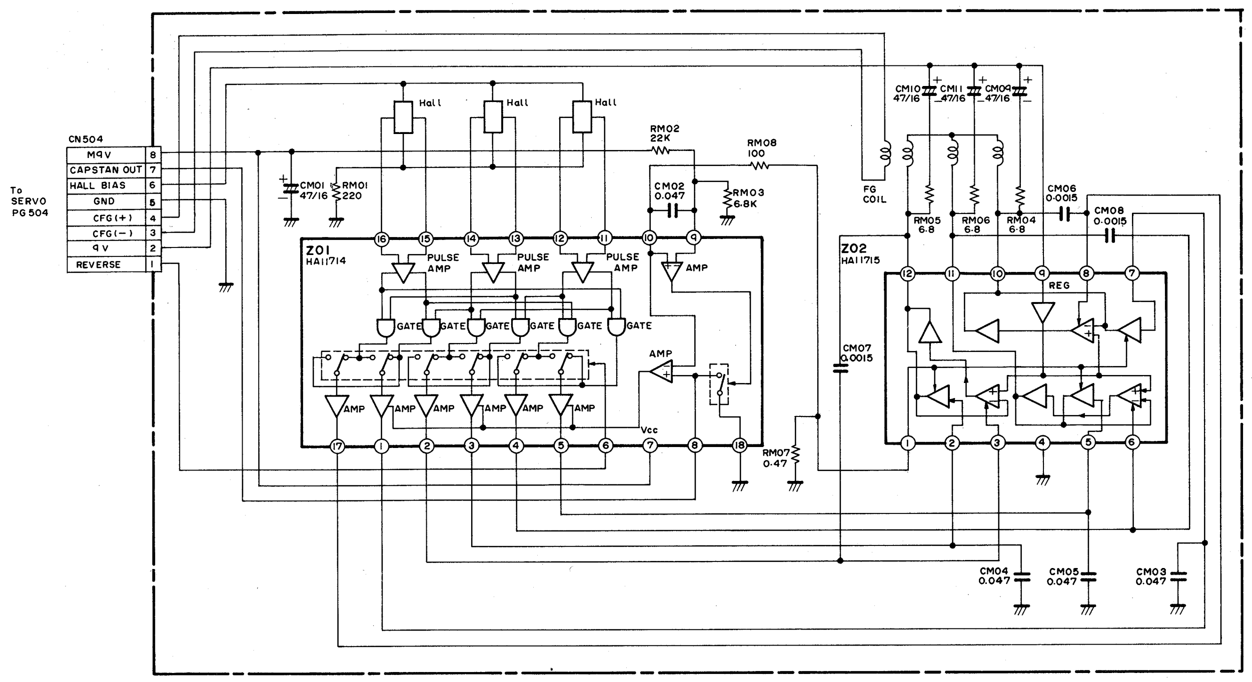
1	12V
2	GND
3	SAVE
4	GND
5	S9V
6	M9V

To SYSTEM CONTROL PG920

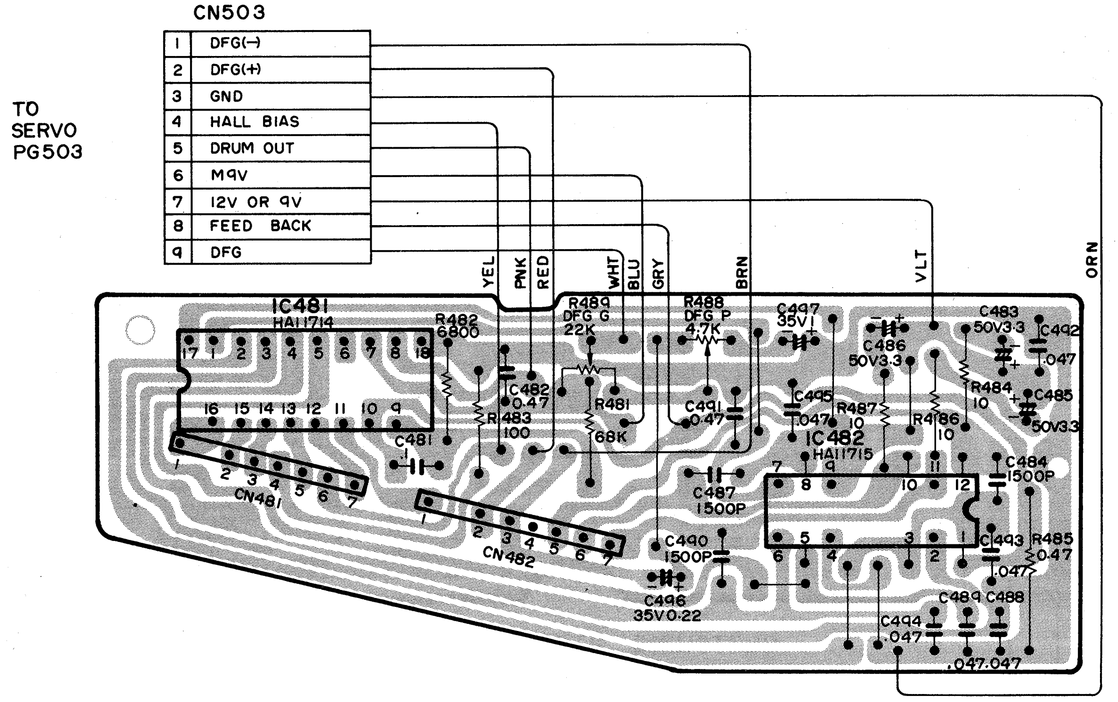
CYLINDER MOTOR SCHEMATIC DIAGRAM


HE 481
HE 482
HE 483
CYLINDER MOTOR
FG COIL
MOTOR COIL
CN481
CN482
CN503
DFG CANSEL
FEED BACK
12V OR 9V
M9V
CYLINDER OUT
HALL BIAS
GND
DFG(−)
DFG(+)
To SERVO PG503
IC481 HA11714
IC482 HA11715
PULSE AMP
GATE
AMP
REG
Vcc
R481 68K
C492 0.047
C481 0.1
R482 6800
R483 100
C483 2.2/20
C484 1500P
C485 2.2/20
C486 2.2/20
R486 10
R487 10
R484 10
R485 0.47
C490 1500P
C487 1500P
C495 0.047
C496 0.47/35
R489 22K-8
R488 4.7K-8
C497 1/35
C482 0.047
C493 0.047
C488 0.047
C489 0.047
C494 0.047
C491 0.047

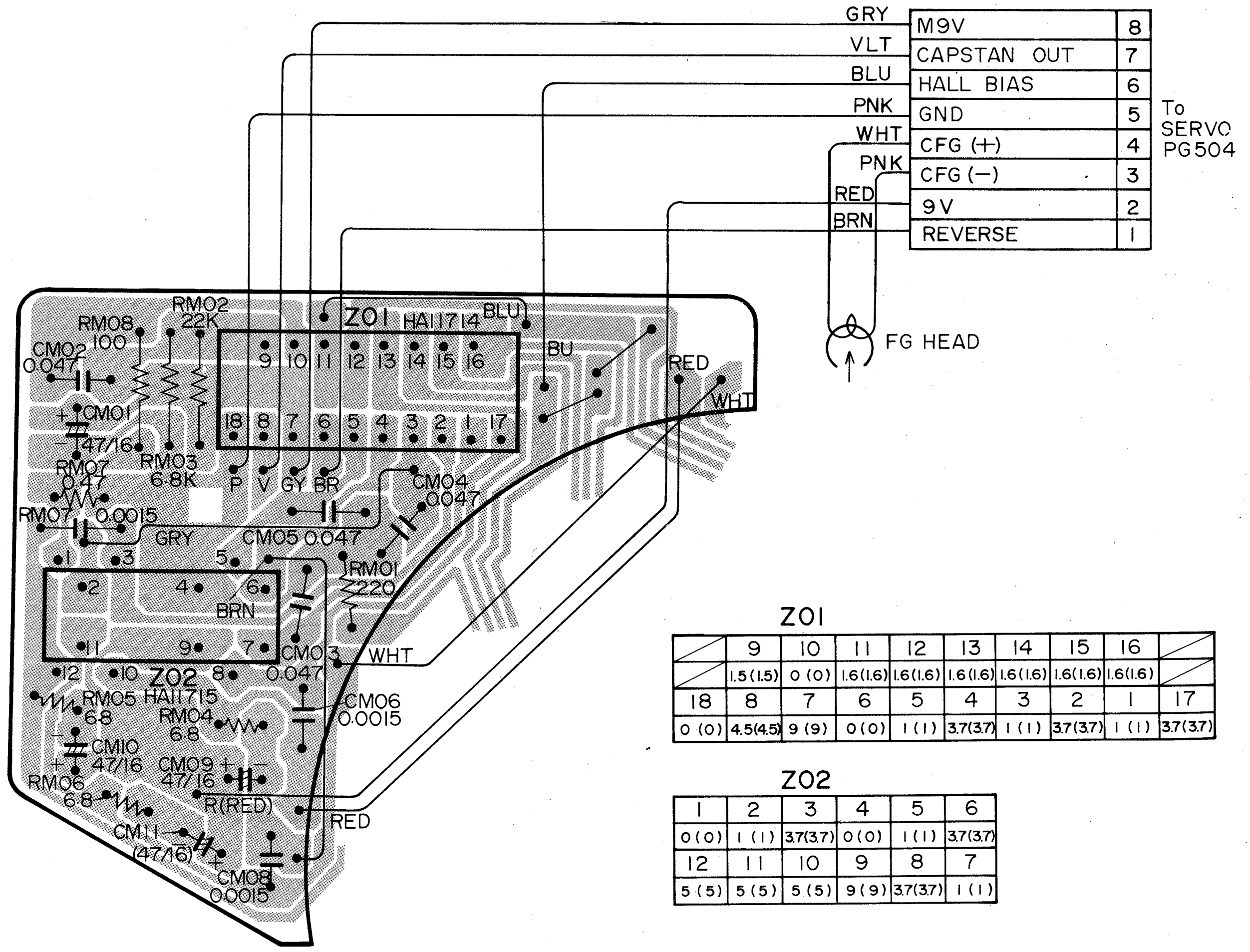
CAPSTAN MOTOR SCHEMATIC DIAGRAM


CN504
M9V
CAPSTAN OUT
HALL BIAS
GND
CFG(+)
CFG(−)
9V
REVERSE
To SERVO PG504
Hall
CM01 47/16
RM01 220
RM02 22K
RM08 100
CM02 0.047
RM03 6.8K
Z01 HA11714
Z02 HA11715
PULSE AMP
GATE
AMP
REG
Vcc
CM10 47/16
CM11 47/16
CM09 47/16
FG COIL
RM05 6.8
RM06 6.8
RM04 6.8
CM06 0.0015
CM08 0.0015
CM07 0.0015
RM07 0.47
CM04 0.047
CM05 0.047
CM03 0.047

CYLINDER MOTOR CIRCUIT BOARD DIAGRAM


CN503
1 DFG(−)
2 DFG(+)
3 GND
4 HALL BIAS
5 DRUM OUT
6 M9V
7 12V OR 9V
8 FEED BACK
9 DFG
TO SERVO PG503
YEL
PNK
RED
WHT
BLU
GRY
BRN
VLT
ORN
IC481 HA11714
IC482 HA11715
CN481
CN482
R482 6800
R489 DFG G 22K
R488 DFG P 4.7K
C497 35V1
C486 50V3.3
C483 50V3.3
C492 .047
C485 50V3.3
C482 0.47
R483 100
R481 68K
C491 0.47
C495 .047
R487 10
R486 10
R484 10
C481
C487 1500P
C484 1500P
C490 1500P
C496 35V0.22
C493 .047
R485 0.47
C494 .047
C489 C488
.047 .047

CAPSTAN MOTOR CIRCUIT BOARD DIAGRAM


GRY M9V 8
VLT CAPSTAN OUT 7
BLU HALL BIAS 6
PNK GND 5
WHT CFG (+) 4
PNK CFG (−) 3
RED 9V 2
BRN REVERSE 1
To SERVO PG504
FG HEAD
Z01 HA11714
Z02 HA11715
RM08 100
RM02 22K
CM02 0.047
CM01 47/16
RM07 0.47
RM03 6.8K
CM07 0.0015
CM04 0.047
CM05 0.047
RM01 220
CM03 0.047
CM06 0.0015
RM05 6.8
RM04 6.8
CM10 47/16
CM09 47/16
RM06 6.8
CM11 (47/16)
CM08 0.0015
R(RED)
BLU
BU
RED
WHT
GRY
BRN
P V GY BR

IC481

17	1	2	3	4	5	6	7	8	18
3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	0 (0)	9 (9)	4.5(4.5)	0(0)
	16	15	14	13	12	11	10	9	
	1.6(1.6)	1.6 (1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	0.1(0.1)	1 (1)	

IC482

7	8	9	10	11	12
1 (1)	3.7(3.7)	9 (9)	5 (5)	5 (5)	5 (5)
6	5	4	3	2	1
3.7(3.7)	1 (1)	0 (0)	3.7(3.7)	1 (1)	0 (0)

Z01

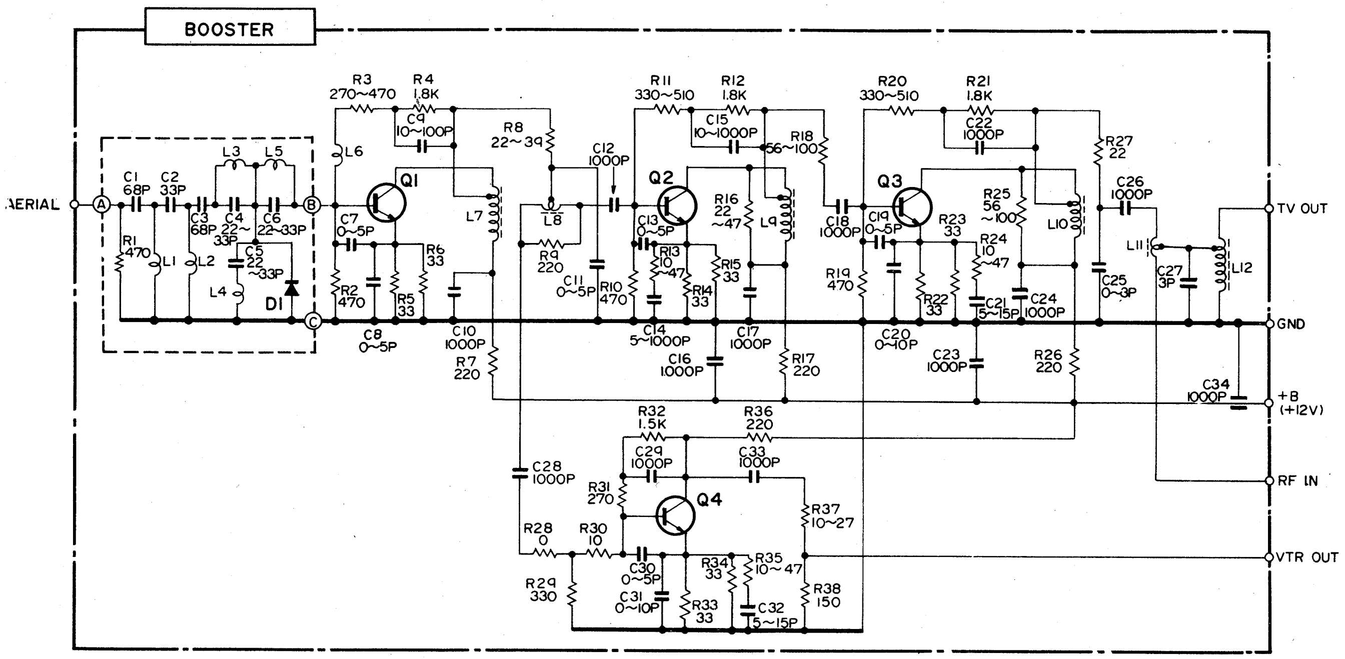
	9	10	11	12	13	14	15	16	
	1.5 (1.5)	0 (0)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	
18	8	7	6	5	4	3	2	1	17
0 (0)	4.5(4.5)	9 (9)	0 (0)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)

Z02

1	2	3	4	5	6
0 (0)	1 (1)	3.7(3.7)	0 (0)	1 (1)	3.7(3.7)
12	11	10	9	8	7
5 (5)	5 (5)	5 (5)	9 (9)	3.7(3.7)	1 (1)

RF BOOSTER INTERNAL CIRCUIT DIAGRAM

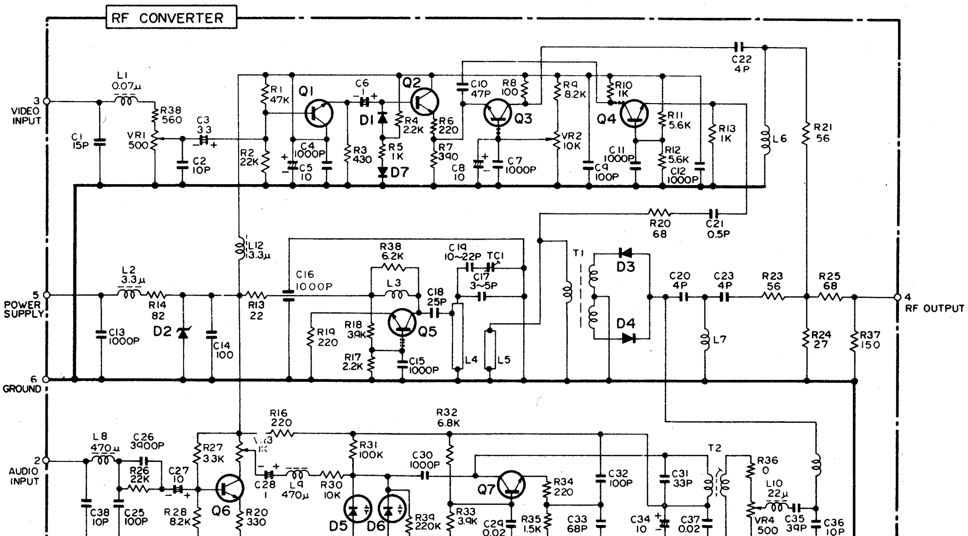
Q1 ~ Q4	D1
2SC2570 OR 2SC2753	IS 2473



BOOSTER
AERIAL
A
B
C
C1 68P
C2 33P
C3 68P
C4 22~33P
C5 22~33P
C6 22~33P
L1
L2
L3
L4
L5
D1
R1 470
R2 470
R3 270~470
R4 1.8K
C9 10~100P
R8 22~39
L6
Q1
C7 0~5P
R5 33
R6 33
C8 0~5P
L7
C10 1000P
R7 220
L8
R9 220
C11 0~5P
C12 1000P
R10 470
R11 330~510
R12 1.8K
C15 10~1000P
R18 56~100
Q2
R16 22~47
L9
C13 0~5P
R13 10~47
R14 33
R15 33
C14 5~1000P
C16 1000P
C17 1000P
R17 220
C18 1000P
R20 330~510
R21 1.8K
C22 1000P
R27 22
Q3
C19 0~5P
R23 33
R25 56~100
R24 10~47
L10
C26 1000P
R19 470
R22 33
C21 5~15P
C24 1000P
C25 0~3P
C20 0~10P
C23 1000P
R26 220
L11
C27 3P
L12
TV OUT
GND
C34 1000P
+B (+12V)
R32 1.5K
R36 220
C29 1000P
C33 1000P
C28 1000P
R31 270
Q4
R37 10~27
RF IN
R28 0
R30 10
C30 0~5P
R34 33
R35 10~47
VTR OUT
R29 330
C31 0~10P
R33 33
C32 5~15P
R38 150

RF CONVERTER INTERNAL CIRCUIT DIAGRAM

Q1	D1	Q2	D2	Q3	D3	Q4	D4
2SC536	IS1926M	2SC1645	RD8.2EB2	2SC1730	ISS99	2SC1730	ISS99



RF CONVERTER
3 VIDEO INPUT
L1 0.07μ
C1 15P
R38 560
VR1 500
C3 3.3
C2 10P
R1 47K
R2 22K
Q1
C4 1000P
C5 10
C6 1
D1
R3 430
Q2
R4 2.2K
R5 1K
D7
R6 220
R7 390
C10 47P
R8 100
Q3
C8 10
C7 1000P
R9 8.2K
VR2 10K
C9 100P
R10 1K
Q4
C11 1000P
R11 5.6K
R12 5.6K
C12 1000P
R13 1K
C22 4P
L6
R21 56
L12 13.3μ
5 POWER SUPPLY
L2 3.3μ
R14 82
C13 1000P
D2
C14 100
R13 22
C16 1000P
R38 6.2K
L3
C19 10~22P
TC1
C17 3~5P
C18 25P
R19 220
R18 3.9K
Q5
R17 2.2K
C15 1000P
L4
L5
R20 68
C21 0.5P
T1
D3
D4
C20 4P
C23 4P
R23 56
R25 68
4 RF OUTPUT
L7
R24 27
R37 150
6 GROUND
2 AUDIO INPUT
L8 470μ
C26 3900P
R26 22K
C27 10
R27 3.3K
C38 10P
C25 100P
R28 8.2K
Q6
R20 330
R16 220
VR3 1K
C28 1
L9 470μ
R30 10K
R31 100K
D5
D6
R39 220K
R32 6.8K
C30 1000P
R33 3.9K
C29 0.02
Q7
R34 220
R35 1.5K
C32 100P
C33 68P
C31 33P
C34 10
C37 0.02
T2
R36 0
L10 22μ
VR4 500
C35 39P
C36 10P
1 GROUND

Q5	D5	Q6	D6	Q7	D7
2SC1730	IS2688	2SC536	IS2688	2SC1675	VD 1221

REPLACEMENT PARTS LIST — DECK

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C203	5058351	TRIMMER 90PF
C206	5058351	TRIMMER 90PF
C350	5058083	TRIMMER 30PF
C515	0256357	ELECTROLYTIC 4.7MF 16V
C538	0256357	ELECTROLYTIC 4.7MF 16V
		RESISTORS
R204	5007195	SEMI VARIABLE 100OHM
R210	5007195	SEMI VARIABLE 100OHM
R212	5007195	SEMI VARIABLE 100OHM
R226-227	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R231-232	5007162	SEMI VARIABLE 1 KOHM
R233	5007161	SEMI VARIABLE 470OHM
R236	5007162	SEMI VARIABLE 1 KOHM
R253	5007186	SEMI VARIABLE RESISTOR 10KOHM
R255	5007187	SEMI VARIABLE RESISTOR 22KOHM
R256	5007186	SEMI VARIABLE RESISTOR 10KOHM
R282	5007186	SEMI VARIABLE RESISTOR 10KOHM
R319	5007186	SEMI VARIABLE RESISTOR 10KOHM
R362	5007186	SEMI VARIABLE RESISTOR 10KOHM
R431	5007191	SEMI VARIABLE RESISTOR 220KOHM
R433	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R437	5007189	SEMI VARIABLE RESISTOR 100KOHM
R441	0170476	FUSE RESISTOR 47OHM+-5% 1/4W
R488	5007164	SEMI VARIABLE 4.7KOHM
R489	5007166	SEMI VARIABLE 22 KOHM
R585-586	5007188	SEMI VARIABLE RESISTOR 47KOHM
R587	5007226	SEMI VARIABLE 47KOHM
R588	5007182	SEMI VARIABLE RESISTOR 470OHM
R592	5007187	SEMI VARIABLE RESISTOR 22KOHM
R593	5007191	SEMI VARIABLE RESISTOR 220KOHM
R596	5007187	SEMI VARIABLE RESISTOR 22KOHM
R599	5007186	SEMI VARIABLE RESISTOR 10KOHM
R620	5005021	VARIABLE RESISTOR 200KOHM
R622	5007164	SEMI VARIABLE 4.7KOHM
R679	5007225	SEMI VARIABLE 22KOHM
R956	0170476	FUSE RESISTOR 47OHM+-5% 1/4W
R990	5007185	SEMI VARIABLE RESISTOR 4.7KOHM
		SEMI-CONDUCTORS
D201-202	5330731	DIODE GERMANIUM IN60 80MHZ 50MW
D251	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D253	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D254-255	0575005	DIODE GERMANIUM 1N60 80M
D256	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D300-304	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D401	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D402	5331511	DIODE DAN201

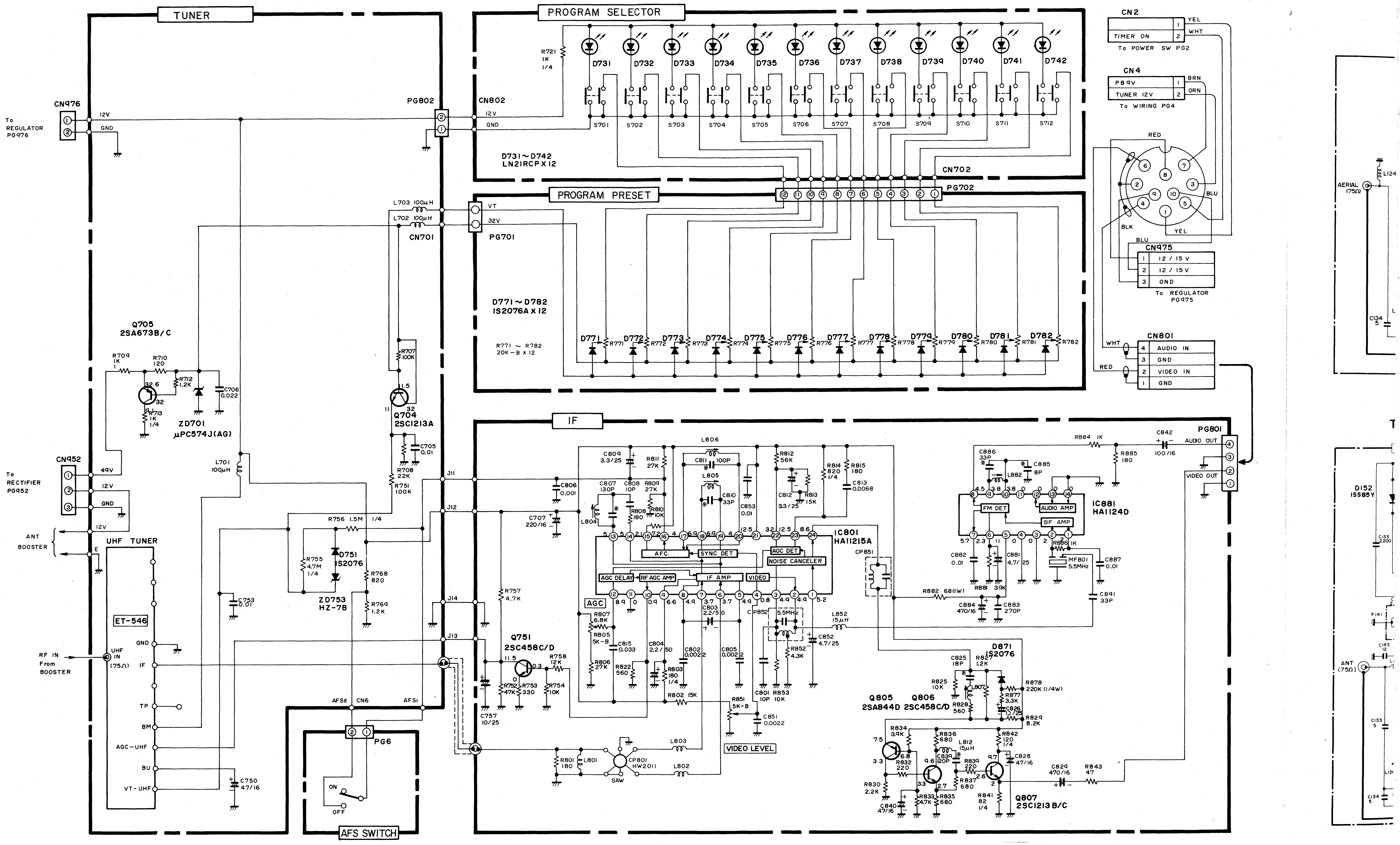
SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
D403	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D404	5331511	DIODE DAN201
D405-407	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D501-505	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D506	5330104	RECTIFIER SILICON V06A 15K
D507-510	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D511(522)	5331511	DIODE DAN201
D512-514	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D517-518	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D519(520)	5331511	DIODE DAN201
D521	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D523	5330104	RECTIFIER SILICON V06A 15K
D524-527	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D531-534	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D551	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D583	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D601-603	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D604	5330394	DIODE HZ6A2
D605-606	5380481	LED SLR-53GC1
D607	5380491	LED LN81CPHL
D608	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D903	5330104	RECTIFIER SILICON V06A 15K
D904	5331431	DIODE ERB81
D905-906	5330104	RECTIFIER SILICON V06A 15K
D907	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D908	5331511	DIODE DAN201
D909	5330104	RECTIFIER SILICON V06A 15K
D910-911	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D912	5330542	DIODE HZ15-3
D913	5331511	DIODE DAN201
D915	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D916	5330316	DIODE HZ7C1
D917	5331511	DIODE DAN201
D919-920	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D932	5331511	DIODE DAN201
D934-935	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D936	5331511	DIODE DAN201
D938-939	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D940	5331511	DIODE DAN201
D942	5330321	ZENER DIODE HZ-9A
D943	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D944	5330316	DIODE HZ7C1
D945	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D946	5331511	DIODE DAN201
D947-948	5330133	DIODE SILICON 1S2076 100MHZ 250MW

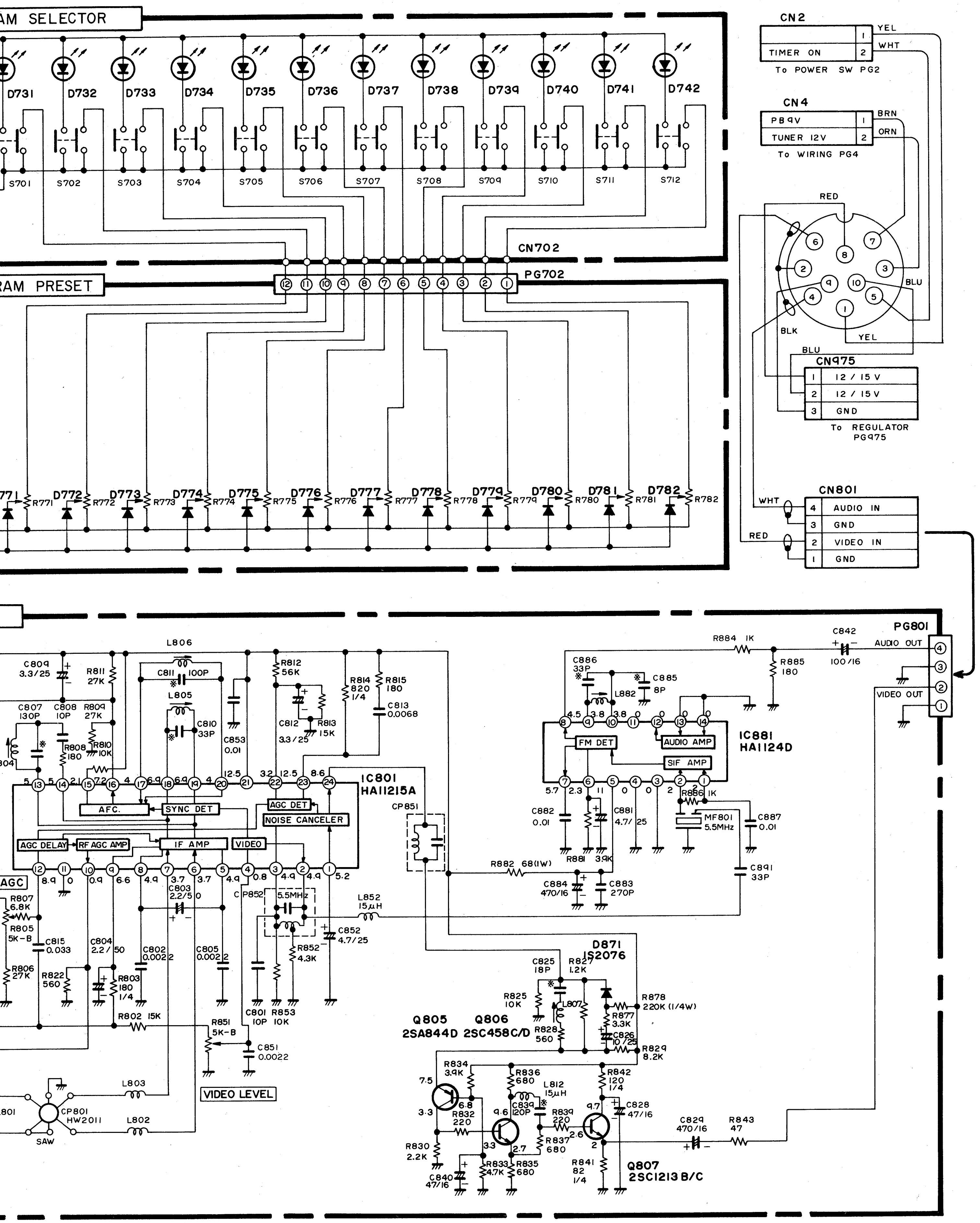
SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
D949	5330104	RECTIFIER SILICON V06A 15K
D950-952	5330104	RECTIFIER SILICON V06A 15K
D953	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D954-955	5380441	LED LN55
D956	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D957	5331511	DIODE DAN201
D959-960	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D961	5331511	DIODE DAN201
D962-968	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D985	5331511	DIODE DAN201
IC202	5351521	IC HA11703
IC203	5351621	IC HA11716
IC204	5358421	IC TA4195
IC205	5358501	IC TA4190
IC206	5358431	IC TA4196
IC207	5358441	IC TA4197
IC208	5358461	IC TA4199
IC209	5068171	CR PACK RC003
IC251	5351501	IC HA11701
IC252	5358451	IC TA4198
IC300	5351601	IC HA11710
IC301	5351551	IC HA11706
IC302	5358371	IC TA4191
IC303	5358381	IC TA4192
IC304	5351551	IC HA11706
IC305	5351671	IC HA11717
IC401	5350712	IC BA329
IC402	5352431	IC BA546
IC403	5359901	IC UPD4066C
IC451	5358541	IC TA4180
IC481	5352111	IC HA11714
IC482	5352121	IC HA11715
IC501	5359842	IC HA11711
IC502-503	5352101	IC HA11713
IC504	5357361	IC TA4145
IC506	5350251	IC HA1406
IC509-511	5359501	IC MPD4011C
IC512	5357331	IC TA4139
IC515	5357221	IC TA4127
IC516	5357201	IC TA4125
IC521-525	5359501	IC MPD4011C
IC526	5359611	IC MPD4001C
IC601	5350271	IC BA301B
IC602	5357322	IC TA4138A
IC603	5359901	IC UPD4066C
IC604	5357371	IC TA4146
IC901	5359777	IC HD38842A23
IC902	5359501	IC MPD4011C
IC903	5359611	IC MPD4001C

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
IC904	5391031	HALL ELEMENT DN6838
IC907	5358311	IC TA4184
IC908	5358251	IC TA4177
IC909	5358241	IC TA4176
IC910	5358302	IC TA4183A
IC911	5358221	IC TA4174
IC912	5358231	IC TA4175
IC913	5358151	IC TA4167
IC985	5357981	IC TA4158
Q201-205	5322462	TRANSISTOR 2SD636R
Q251	5321252	2SA844D
Q252	5320069	TRANSISTOR 2SC458CD
Q255-256	5320069	TRANSISTOR 2SC458CD
Q300-301	5320069	TRANSISTOR 2SC458CD
Q302	5321941	TRANSISTOR 2SK104H
Q303-305	5320069	TRANSISTOR 2SC458CD
Q401-406	5320069	TRANSISTOR 2SC458CD
Q407	5320613	TRANSISTOR 2SC1213C
Q408	5322721	TRANSISTOR 2SC2001
Q409-410	5320069	TRANSISTOR 2SC458CD
Q411	5320613	TRANSISTOR 2SC1213C
Q412	5320069	TRANSISTOR 2SC458CD
Q501	5321661	TRANSISTOR 2SC2021R
Q502	5320593	TRANSISTOR SILICON 2SA673C 80M
Q503	5320643	TRANSISTOR SILICON 2SC1162 150M
Q504-505	5321661	TRANSISTOR 2SC2021R
Q506	5320614	TRANSISTOR 2SC1213D
Q509	5321661	TRANSISTOR 2SC2021R
Q511	5321672	TRANSISTOR 2SA786R
Q512	5321661	TRANSISTOR 2SC2021R
Q513-514	5321672	TRANSISTOR 2SA786R
Q515-518	5321661	TRANSISTOR 2SC2021R
Q521	5321672	TRANSISTOR 2SA786R
Q522	5321661	TRANSISTOR 2SC2021R
Q550	5321661	TRANSISTOR 2SC2021R
Q601-603	5320069	TRANSISTOR 2SC458CD
Q901-903	5321661	TRANSISTOR 2SC2021R
Q907	5320723	TRANSISTOR 2SA715WT-C
Q908-909	5320643	TRANSISTOR SILICON 2SC1162 150M
Q910-911	5321661	TRANSISTOR 2SC2021R
Q912	5320723	TRANSISTOR 2SA715WT-C
Q913	5320643	TRANSISTOR SILICON 2SC1162 150M
Q914	5320723	TRANSISTOR 2SA715WT-C
Q915	5380471	PHOTO TRANSISTOR PN150TV
Q916	5380471	PHOTO TRANSISTOR PN150TV
Q920	5321252	2SA844D
Q921-924	5321661	TRANSISTOR 2SC2021R
Q985	5320613	TRANSISTOR 2SC1213C
Q986-987	5321292	TRANSISTOR 2SC1740S

SYMBOL-NO	P-NO	DESCRIPTION
		TRANSFORMERS
T401	5260366	BIAS COIL
		COILS
L201	5150365	CHOKE COIL 3.9 MH
L202	5152075	CHOKE COIL 12MH
L203-204	5152073	CHOKE COIL 8.2MICROH
L205	5152087	PEAKING COIL 100MICROH
L206	5152089	PEAKING COIL 150MICROH
L207	5152087	PEAKING COIL 100MICROH
L209	5152079	CHOKE COIL 22UH+-10%
L210	5152083	CHOKE COIL
L211	5152092	PEAKING COIL 220MICROH
L212	5152087	PEAKING COIL 100MICROH
L214	5152079	CHOKE COIL 22UH+-10%
L215	5152087	PEAKING COIL 100MICROH
L216	5152092	PEAKING COIL 220MICROH
L217	5152076	CHOKE COIL 15MICROH
L251	5152095	CHOKE COIL 390MICROH
L252	5152087	PEAKING COIL 100MICROH
L253-254	5152075	CHOKE COIL 12MH
L255	5152087	PEAKING COIL 100MICROH
L300	5152087	PEAKING COIL 100MICROH
L301	5152099	CHOKE COIL 820UH+-10%
L302-304	5152087	PEAKING COIL 100MICROH
L305	5150366	CHOKE COIL 15 MH
L306	5152087	PEAKING COIL 100MICROH
L401	5150361	CHOKE COIL
L402	5152099	CHOKE COIL 820UH+-10%
L403	5150573	CHOKE COIL
L404	5152099	CHOKE COIL 820UH+-10%
L451	5152087	PEAKING COIL 100MICROH
L901	5641171	RELAY
		CRYSTALS
X300	5780534	CRYSTAL 4.435572MHZ
X301	5780533	CRYSTAL 4.433619MHZ
X501	5780492	CRYSTAL

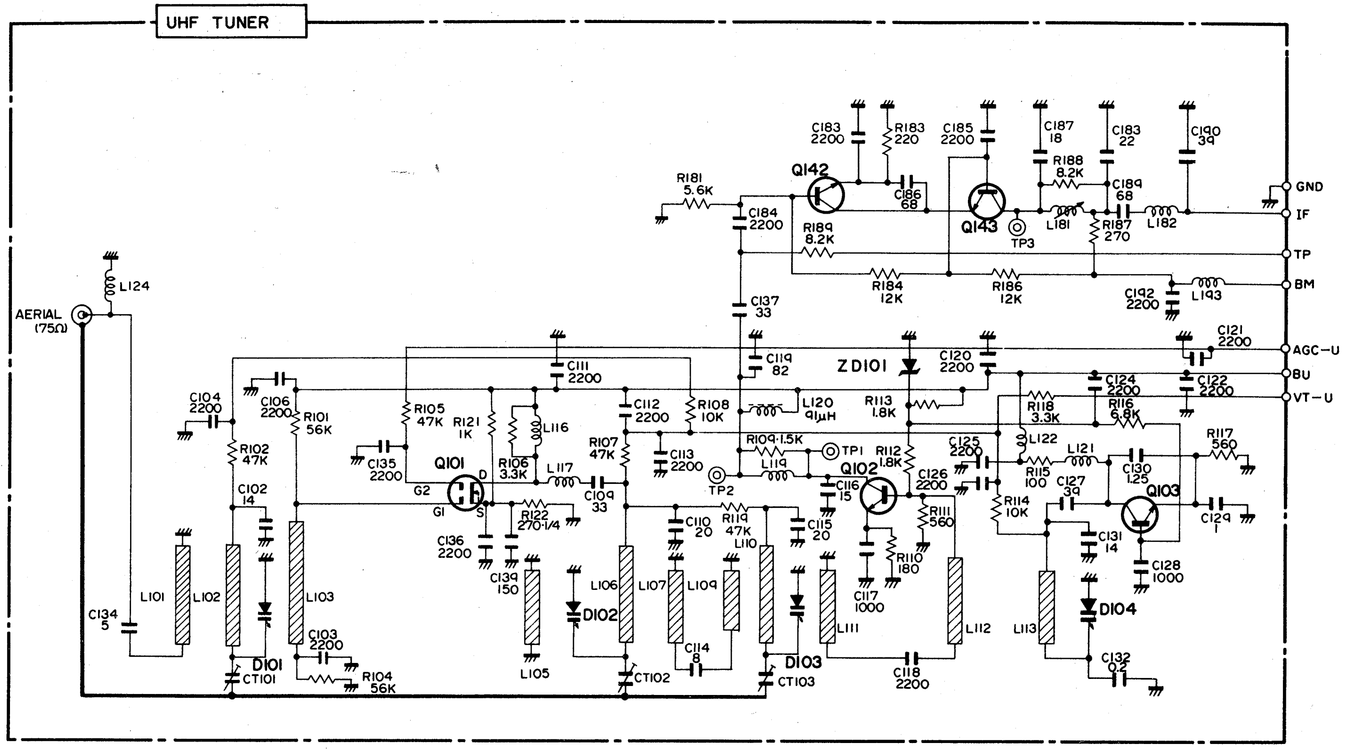
SYMBOL-NO	P-NO	DESCRIPTION
		MISCELLANEOUS
	6755481	IC HOLDER
CP201	5161985	LOW PASS FILTER
CP202	5161981	DELAY LINE
CP203	5161954	HIGH PASS FILTER
CP251	5161985	LOW PASS FILTER
CP252	5161981	DELAY LINE
CP253	5161931	DELAY LINE
CP300	5161971	LOW PASS FILTER
CP301	5161972	BAND PASS FILTER
CP302	5161952	LOW PASS FILTER
CP303	5161973	BAND PASS FILTER
CP304	5161974	BAND PASS FILTER
DL201	5785111	1H DELAY LINE
DL300	5785121	2H DELAY LINE
F901-902	5721062	FUSE 4A 250V
J601	5670462	MOULD JACK - 3.5MMD SLIDE SYNC
J602	5671712	JACK WITH SWITCH
J603	5659391	10P SOCKET
J604	5677131	8P DIN SOCKET
J605	5678091	DC JACK
J902	5678081	DC JACK
J903	5672021	JACK-2.5MMD
PG406	5677351	10P DIN SOCKET
PG410	5679671	JACK PLATE
RL401	5641362	RELAY
RL402	5641371	RELAY
SW251	5624241	SLIDE SWITCH
SW401	5623551	SLIDE SWITCH
S901	5634329	PUSH SWITCH
S914	5633362	PUSH SWITCH
S915	5601166	PUSH SWITCH
S916-917	5601165	SWITCH
S918	5601165	SWITCH
S919	5633311	PUSH SWITCH


TUNER
PROGRAM SELECTOR
PROGRAM PRESET
IF
CN976
To REGULATOR PG976
12V
GND
PG802
CN802
D731
D732
D733
D734
D735
D736
D737
D738
D739
D740
D741
D742
S701
S702
S703
S704
S705
S706
S707
S708
S709
S710
S711
S712
R721 1K 1/4
D731~D742 LN21RCPX12
CN702
PG702
L703 100μH
L702 100μH
VT
32V
CN701
PG701
D771~D782 1S2076A x 12
R771 ~ R782 20K-B x 12
D771
D772
D773
D774
D775
D776
D777
D778
D779
D780
D781
D782
R771
R772
R773
R774
R775
R776
R777
R778
R779
R780
R781
R782
Q705 2SA673B/C
R709 1K
R710 120
R712 1.2K
R713 1K 1/4
C706 0.022
ZD701 μPC574J(AG)
R707 100K
Q704 2SC1213A
C705 0.01
R708 22K
R751 100K
CN952
To RECTIFIER PG952
49V
12V
GND
ANT BOOSTER
UHF TUNER
ET-546
RF IN From BOOSTER
UHF IN (75Ω)
GND
IF
TP
BM
AGC-UHF
BU
VT-UHF
L701 100μH
C753 0.01
C750 47/16
R756 1.5M 1/4
R755 4.7M 1/4
D751 1S2076
ZD753 HZ-7B
R768 820
R769 1.2K
J11
J12
J13
J14
R757 4.7K
Q751 2SC458C/D
R758 12K
R752 47K
R753 330
R754 10K
C757 10/25
AFS2
CN6
AFS1
PG6
ON
OFF
AFS SWITCH
C806 0.001
C707 220/16
L806
C809 3.3/25
R811 27K
C811 100P
L805
C810 33P
R812 56K
R814 820 1/4
R815 180
C813 0.0068
C807 130P
C808 10P
R809 27K
R808 180
R810 10K
L804
C853 0.01
C812 3.3/25
R813 15K
IC801 HA11215A
AFC
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RF AGC AMP
IF AMP
VIDEO
AGC
CP851
R807 6.8K
R805 5K-B
C815 0.033
C804 2.2/50
C803 2.2/50
C802 0.0022
C805 0.0022
CP852 5.5MHz
R852 4.3K
C852 4.7/25
L852 15μH
R806 27K
R822 560
R803 180 1/4
R802 15K
R851 5K-B
C801 10P
R853 10K
C851 0.0022
VIDEO LEVEL
R801 180
L801
CP801 HW2011
SAW
L803
L802
CN2
TIMER ON
YEL
WHT
To POWER SW PG2
CN4
PB9V
TUNER 12V
BRN
ORN
To WIRING PG4
RED
BLU
BLK
YEL
CN975
12 / 15V
12 / 15V
GND
To REGULATOR PG975
CN801
AUDIO IN
GND
VIDEO IN
GND
WHT
RED
PG801
AUDIO OUT
VIDEO OUT
R884 1K
C842 100/16
R885 180
C886 33P
C885 8P
L882 1.2K
FM DET
AUDIO AMP
SIF AMP
IC881 HA1124D
C882 0.01
C881 4.7/25
R881 3.9K
R886 1K
MF801 5.5MHz
C887 0.01
R882 68(1W)
C884 470/16
C883 270P
C891 33P
D871 1S2076
C825 18P
R827 1.2K
R825 10K
L807
R878 220K (1/4W)
R877 3.3K
C826 15/25
R829 8.2K
R828 560
Q805 2SA844D
Q806 2SC458C/D
R834 3.9K
R836 680
L812 15μH
R842 120 1/4
C828 47/16
C830 120P
R839 220
R837 680
R832 220
R830 2.2K
C840 47/16
R833 4.7K
R835 680
R841 82 1/4
Q807 2SC1213B/C
C829 470/16
R843 47
L124
AERIAL (75Ω)
C134 5
T
D152 1SS85Y
C153 2200
F141
C143 12
ANT (75Ω)
C133 5
C134 5


AM SELECTOR
D731 D732 D733 D734 D735 D736 D737 D738 D739 D740 D741 D742
S701 S702 S703 S704 S705 S706 S707 S708 S709 S710 S711 S712
CN702
AM PRESET
PG702
CN2
TIMER ON
To POWER SW PG2
YEL
WHT
CN4
P8.9V
TUNER 12V
To WIRING PG4
BRN
ORN
RED
BLU
BLK
YEL
CN975
12 / 15 V
GND
To REGULATOR PG975
D771 D772 D773 D774 D775 D776 D777 D778 D779 D780 D781 D782
R771 R772 R773 R774 R775 R776 R777 R778 R779 R780 R781 R782
CN801
AUDIO IN
GND
VIDEO IN
WHT
RED
PG801
AUDIO OUT
VIDEO OUT
L806
IC801
HA11215A
AFC.
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RF AGC AMP
IF AMP
VIDEO
AGC
CP851
CP852
5.5MHz
L852 15μH
IC881
HA1124D
FM DET
AUDIO AMP
SIF AMP
MF801 5.5MHz
C842 100/16
R884 1K
R885 180
D871 1S2076
Q805 2SA844D
Q806 2SC458C/D
Q807 2SC1213B/C
VIDEO LEVEL
CP801 HW2011
SAW
L803
L802
R802 15K
R851 5K-B
C851 0.0022
R843 47
C829 470/16

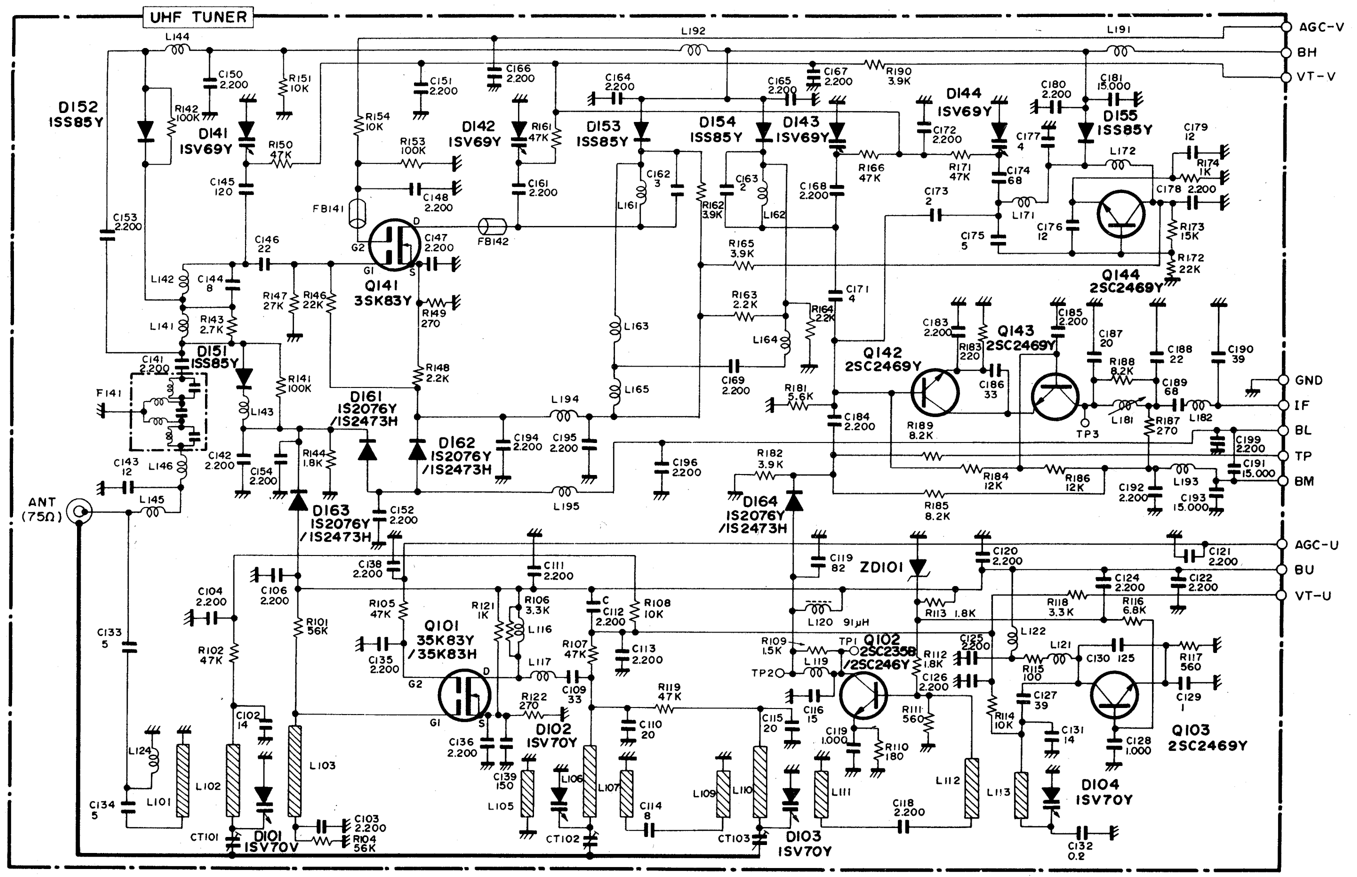
TUNER (ET-546) INTERNAL CIRCUIT DIAGRAM (For the UK model)

Q101	Q102	Q103	Q142	Q143
3SK83Y/3SK82Y	2SC2353B/2SC2466Y	2SC2468Y	2SC2469Y	2SC2469Y

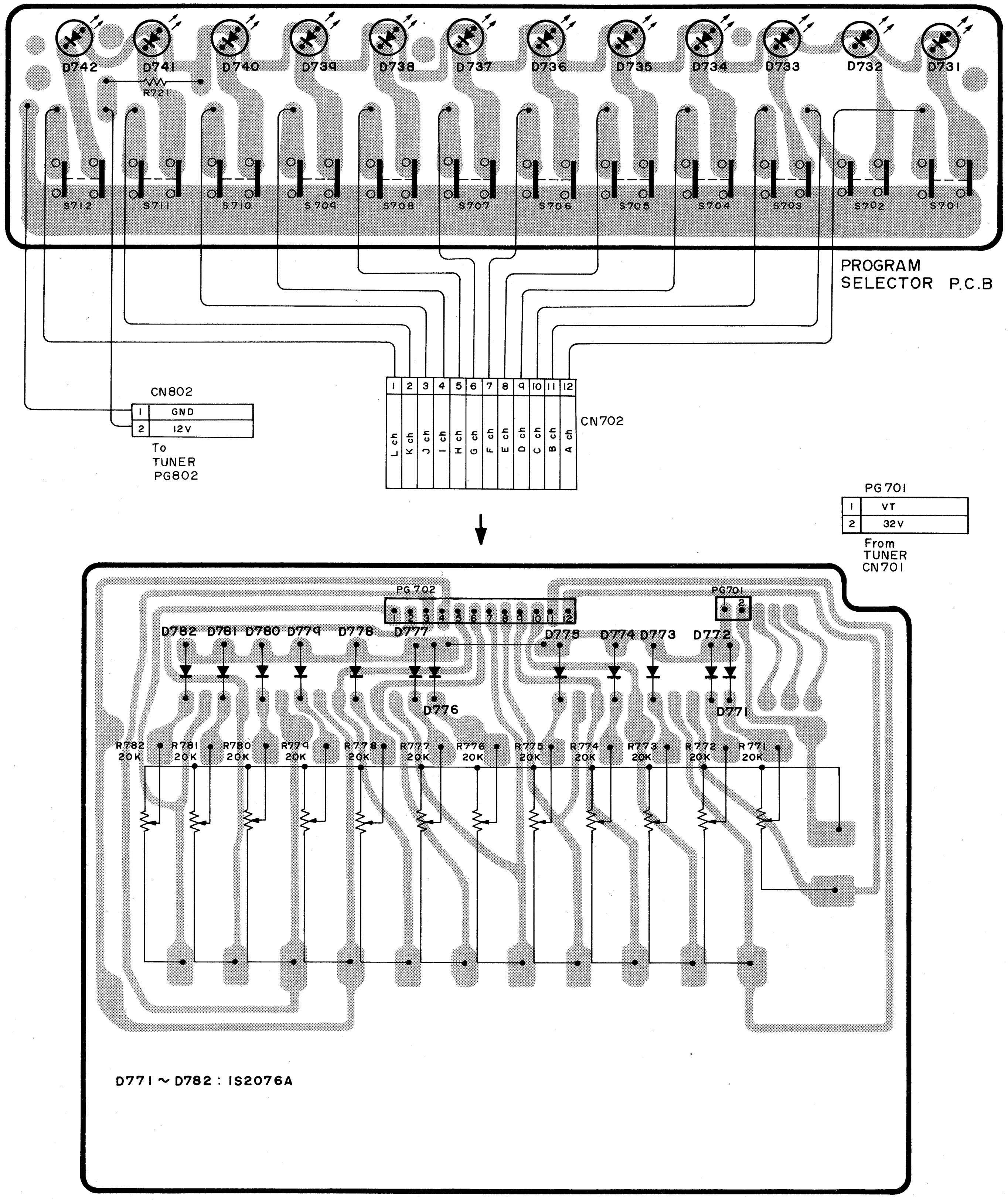

UHF TUNER
AERIAL (75Ω)
GND
IF
TP
BM
AGC-U
BU
VT-U
Q101
Q102
Q103
Q142
Q143
ZD101
D101
D102
D103
D104
TP1
TP2
TP3
L101 L102 L103 L105 L106 L107 L109 L111 L112 L113 L124
CT101 CT102 CT103

D101	D102	D103	D104	ZD101
ISV 70	ISV 70	ISV 70	ISV 70	HZ4C/HZ5A

TUNER (ET-541) INTERNAL CIRCUIT DIAGRAM (Except for the UK model)


UHF TUNER
AGC-V
BH
VT-V
D152 ISS85Y
D141 ISV69Y
D142 ISV69Y
D153 ISS85Y
D154 ISS85Y
D143 ISV69Y
D144 ISV69Y
D155 ISS85Y
Q144 2SC2469Y
Q141 3SK83Y
D151 ISS85Y
D161 IS2076Y /IS2473H
D162 IS2076Y /IS2473H
D163 IS2076Y /IS2473H
D164 IS2076Y /IS2473H
Q142 2SC2469Y
Q143 2SC2469Y
ANT (75Ω)
GND
IF
BL
TP
BM
AGC-U
BU
VT-U
Q101 35K83Y /35K83H
Q102 2SC2358 /2SC2466Y
Q103 2SC2469Y
ZD101
D101 ISV70Y
D102 ISV70Y
D103 ISV70Y
D104 ISV70Y
TP1
TP2
TP3

PROGRAM SELECTOR/PROGRAM PRESET CIRCUIT BOARD DIAGRAM (For the UK model)


D742
D741
R721
D740
D739
D738
D737
D736
D735
D734
D733
D732
D731
S712
S711
S710
S709
S708
S707
S706
S705
S704
S703
S702
S701
PROGRAM SELECTOR P.C.B
CN802
1 GND
2 12V
To TUNER PG802
CN702
1 2 3 4 5 6 7 8 9 10 11 12
L ch
K ch
J ch
I ch
H ch
G ch
F ch
E ch
D ch
C ch
B ch
A ch
PG701
1 VT
2 32V
From TUNER CN701
PG702
PG701
D782 D781 D780 D779 D778 D777 D775 D774 D773 D772
D776
D771
R782 20K
R781 20K
R780 20K
R779 20K
R778 20K
R777 20K
R776 20K
R775 20K
R774 20K
R773 20K
R772 20K
R771 20K
D771 ~ D782 : IS2076A

PROGRAM PRESET P.C.B

TUNER/IF CIRCUIT BOARD DIAGRAM (For the UK model)

Q805

B	6.8
C	3.3
E	7.5

Q806

B	3.3
C	9.6
E	2.7

Q807

B	2.6
C	9.7
E	2.0

PG801

AUDIO OUT	4
GND	3
VIDEO OUT	2
GND	1

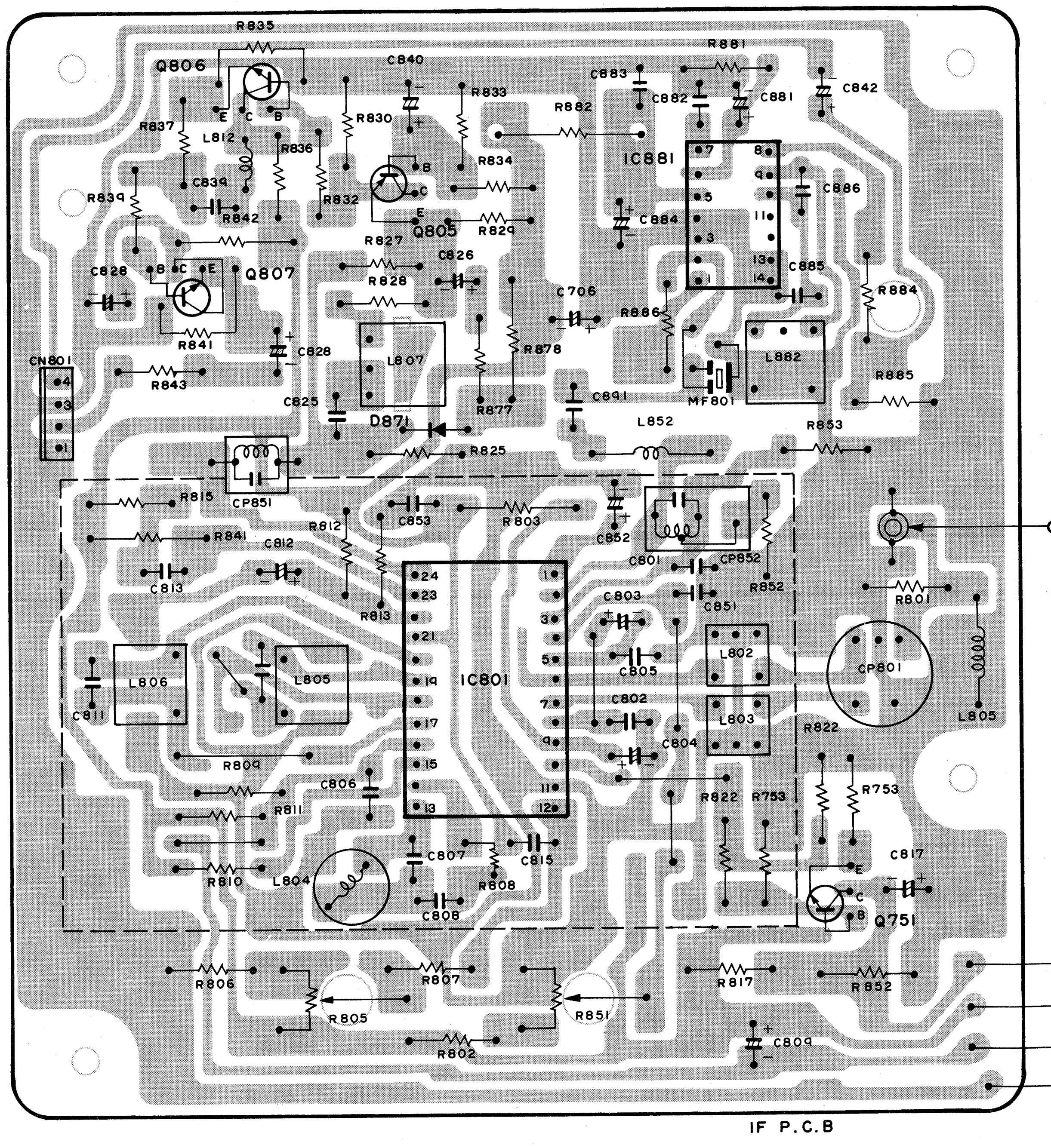
From 10P CONNECTOR CN801

IC881

7	5.7	8	4.5
6	2.3	9	3.8
5	11	10	3.8
4	0	11	0
3	0	12	0
2	2.0	13	0
1	2.0	14	0

IC801

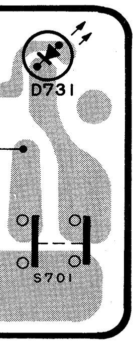
24	8.6	1	5.2
23	12.5	2	4.9
22	3.2	3	4.9
21	12.5	4	0.8
20	4.0	5	4.9
19	6.9	6	3.7
18	6.9	7	3.7
17	4.0	8	4.9
16	7.2	9	6.6
15	2.1	10	0.9
14	5.0	11	0
13	5.0	12	8.9


R835
Q806
C840
C883
R881
C842
C882
C881
R833
R882
R837
L812
E C B
R830
R836
R834
IC881
C886
R839
C839
R842
R832
Q805
R829
R827
C884
C885
C826
R828
R884
C828
Q807
C706
R886
R841
C828
R878
CN801
R843
L807
L882
R885
C825
C891
MF801
D871
R877
L852
R853
CP851
R825
R815
R841
C812
R812
C853
R803
C852
CP852
C813
R813
C801
R852
C851
R801
C803
L806
L805
IC801
C805
L802
CP801
L805
C811
C802
L803
C804
R822
R809
C806
R822
R753
R811
C807
C815
C817
R810
L804
R808
Q751
C808
R806
R807
R817
R852
R805
R851
R802
C809
AF SWIT P.C.

IF P.C.B

Q751

B	0.3
C	11.5
E	0



M
TOR P.C.B

TUNER/IF CIRCUIT BOARD DIAGRAM (For the UK model)

Q805

B	6.8
C	3.3
E	7.5

Q806

B	3.3
C	9.6
E	2.7

Q807

B	2.6
C	9.7
E	2.0

PG801

AUDIO OUT	4
GND	3
VIDEO OUT	2
GND	1

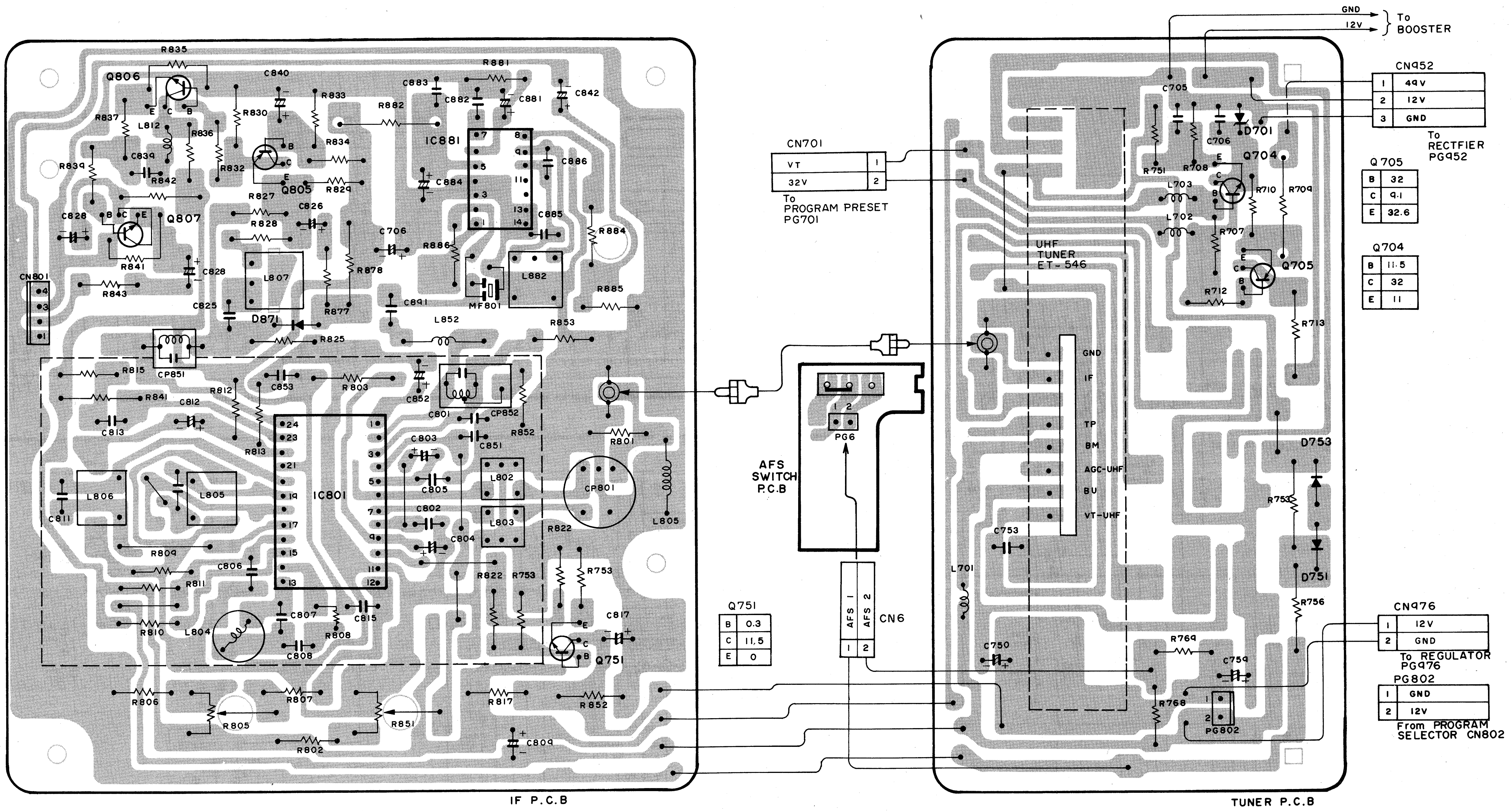
From IOP
CONNECTOR
CN801

IC881

7	5.7	8	4.5
6	2.3	9	3.8
5	11	10	3.8
4	0	11	0
3	0	12	0
2	2.0	13	0
1	2.0	14	0

IC801

24	8.6	1	5.2
23	12.5	2	4.9
22	3.2	3	4.9
21	12.5	4	0.8
20	4.0	5	4.9
19	6.9	6	3.7
18	6.9	7	3.7
17	4.0	8	4.9
16	7.2	9	6.6
15	2.1	10	0.9
14	5.0	11	0
13	5.0	12	8.9


R835
Q806
E C B
C840
R833
R881
C883
C882
C881
C842
R837
L812
R830
R882
R836
B
C839
R834
IC881
C886
R839
R832
C
E
Q805
R842
R829
C884
R827
C826
C885
C828
B C E
Q807
R828
C706
R886
R884
R841
C828
L807
R878
L882
CN801
R843
MF801
R885
C825
C891
R877
D871
L852
R853
CP851
R825
R815
C853
R803
R841
R812
C812
C852
C801
CP852
C813
R813
C803
R852
C851
R801
L806
L805
C805
L802
CP801
IC801
C811
C802
L803
C804
L805
R822
R809
C806
R822
R753
R811
C807
C815
C817
R810
L804
R808
E
C
B
Q751
C808
R806
R807
R817
R852
R805
R851
R802
C809
IF P.C.B
CN701
VT 1
32V 2
To
PROGRAM PRESET
PG701
1 2
PG6
AFS
SWITCH
P.C.B
AFS 1
AFS 2
1 2
CN6
GND
12V
To
BOOSTER
CN952
1 49V
2 12V
3 GND
To
RECTFIER
PG952
C705
C706
D701
R751
R708
Q704
L703
B
C
E
R710
R709
L702
R707
UHF
TUNER
ET-546
E
C
B
Q705
R712
R713
GND
IF
TP
BM
AGC-UHF
BU
VT-UHF
D753
R753
C753
D751
L701
R756
CN976
1 12V
2 GND
To REGULATOR
PG976
C750
R769
C759
PG802
1 GND
2 12V
From PROGRAM
SELECTOR CN802
R768
1
2
PG802
TUNER P.C.B

Q751

B	0.3
C	11.5
E	0

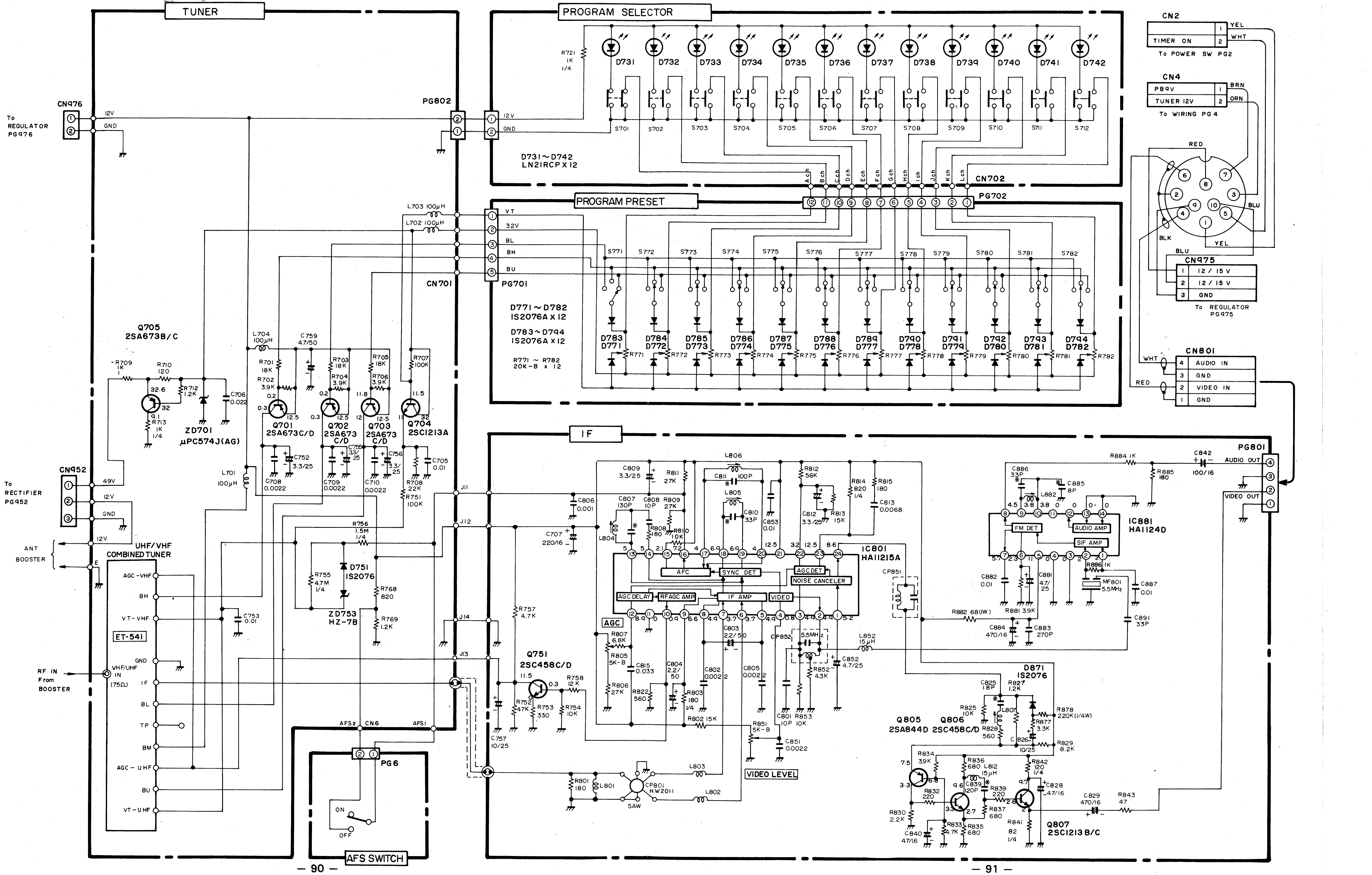
Q705

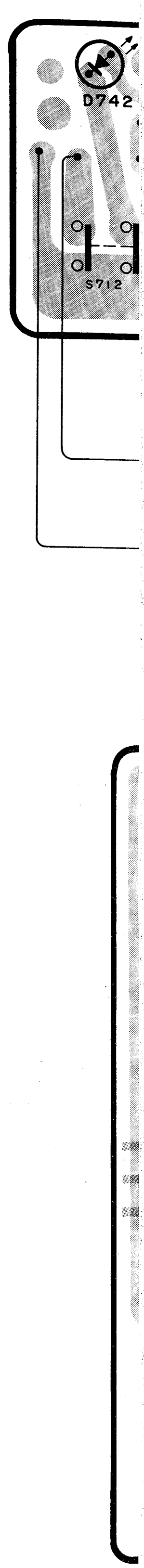
B	32
C	9.1
E	32.6

Q704

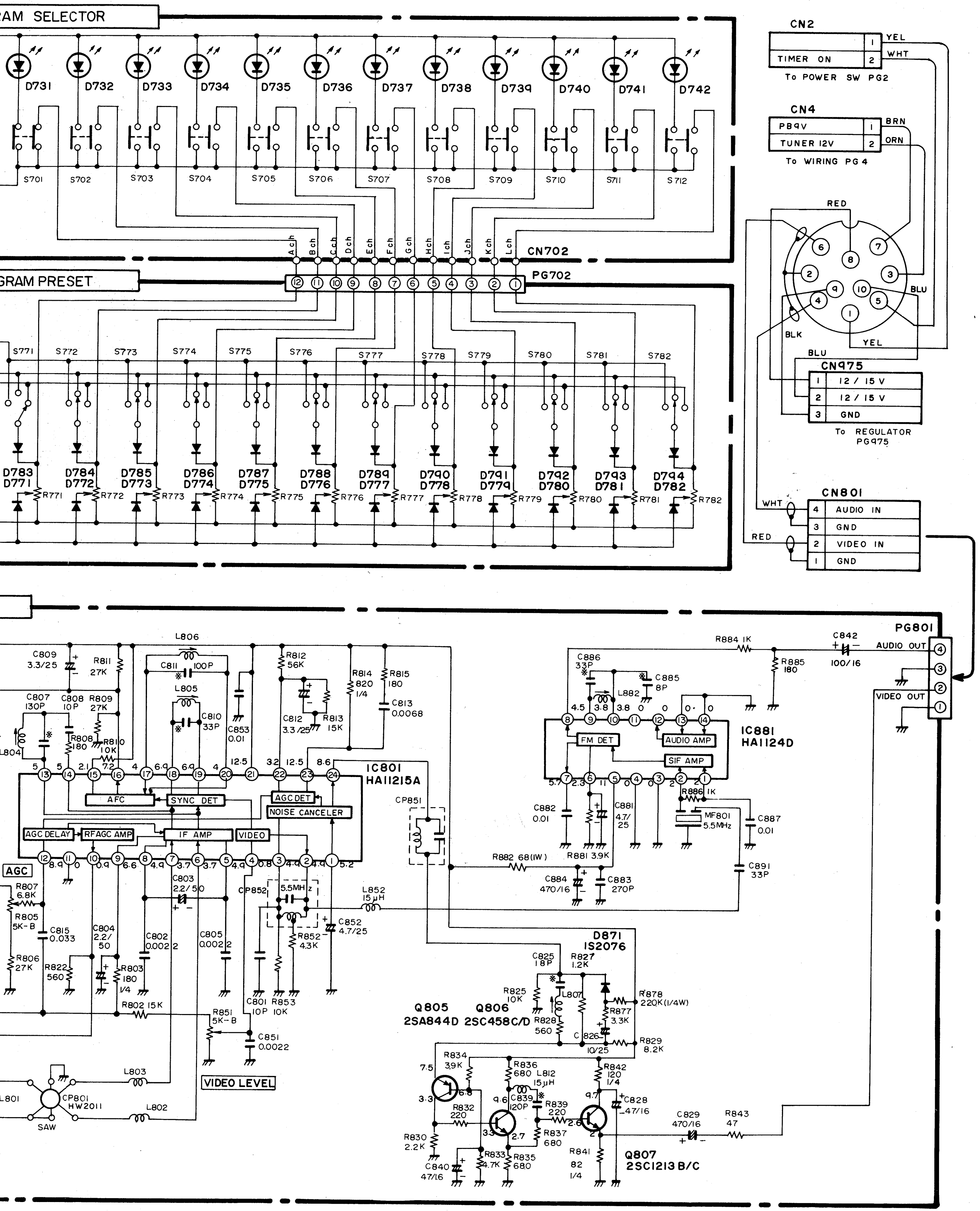
B	11.5
C	32
E	11

TUNER/IF/PROGRAM SELECTOR/PROGRAM PRESET SCHEMATIC DIAGRAM (Except for the UK model)


TUNER
PROGRAM SELECTOR
PROGRAM PRESET
IF
CN976
To REGULATOR PG976
12V
GND
PG802
CN952
To RECTIFIER PG952
49V
12V
GND
ANT BOOSTER
RF IN From BOOSTER
UHF/VHF COMBINED TUNER
ET-541
AGC-VHF
BH
VT-VHF
GND
VHF/UHF IN (75Ω)
IF
BL
TP
BM
AGC-UHF
BU
VT-UHF
Q705 2SA673B/C
R709 1K
R710 120
R712 1.2K
R713 1K 1/4
ZD701 μPC574J(AG)
C706 0.022
L701 100μH
L704 100μH
C759 47/50
R701 18K
R702 3.9K
R703 18K
R704 3.9K
R705 18K
R706 3.9K
R707 100K
Q701 2SA673C/D
Q702 2SA673 C/D
Q703 2SA673 C/D
Q704 2SC1213A
C752 3.3/25
C755 3.3/25
C756 3.3/25
C705 0.01
C708 0.0022
C709 0.0022
C710 0.0022
R708 22K
R751 100K
R756 1.5M 1/4
D751 1S2076
R755 4.7M 1/4
ZD753 HZ-7B
R768 820
R769 1.2K
C753 0.01
L703 100μH
L702 100μH
CN701
PG701
VT
32V
BL
BH
BU
J11
J12
J13
J14
AFS2
CN6
AFS1
PG6
ON
OFF
AFS SWITCH
R721 1K 1/4
D731 D732 D733 D734 D735 D736 D737 D738 D739 D740 D741 D742
S701 S702 S703 S704 S705 S706 S707 S708 S709 S710 S711 S712
D731~D742 LN21RCPX12
Ach Bch Cch Dch Ech Fch Gch Hch Ich Jch Kch Lch
CN702
PG702
S771 S772 S773 S774 S775 S776 S777 S778 S779 S780 S781 S782
D771~D782 1S2076A x 12
D783~D794 1S2076A x 12
R771 ~ R782 20K-B x 12
D783 D771
D784 D772
D785 D773
D786 D774
D787 D775
D788 D776
D789 D777
D790 D778
D791 D779
D792 D780
D793 D781
D794 D782
R771 R772 R773 R774 R775 R776 R777 R778 R779 R780 R781 R782
CN2
TIMER ON
To POWER SW PG2
YEL
WHT
CN4
PB9V
TUNER 12V
To WIRING PG4
BRN
ORN
RED
BLU
BLK
YEL
CN975
12/15V
12/15V
GND
To REGULATOR PG975
CN801
AUDIO IN
GND
VIDEO IN
GND
WHT
RED
PG801
AUDIO OUT
VIDEO OUT
R884 1K
C842 100/16
R885 180
C806 0.001
C707 220/16
C809 3.3/25
R811 27K
L806
C811 100P
L805
C810 33P
C807 130P
C808 10P
R809 27K
L804
R808 180
R810 10K
C853 0.01
R812 56K
C812 3.3/25
R813 15K
R814 820 1/4
R815 180
C813 0.0068
IC801 HA11215A
AFC
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RF AGC AMP
IF AMP
VIDEO
AGC
R807 6.8K
R805 5K-B
C815 0.033
R806 27K
R822 560
C804 2.2/50
R803 180 1/4
C803 2.2/50
C802 0.0022
C805 0.0022
R802 15K
CP852
5.5MHz
R852 4.3K
C852 4.7/25
C801 10P
R853 10K
R851 5K-B
C851 0.0022
VIDEO LEVEL
CP851
L852 15μH
R882 68(1W)
R757 4.7K
Q751 2SC458C/D
R758 12K
R752 47K
R753 330
R754 10K
C757 10/25
R801 180
L801
CP801 HW2011
SAW
L803
L802
C886 33P
C885 8P
L882
IC881 HA1124D
FM DET
AUDIO AMP
SIF AMP
C882 0.01
C881 4.7/25
R881 3.9K
R886 1K
MF801 5.5MHz
C887 0.01
C884 470/16
C883 270P
C891 33P
D871 1S2076
C825 18P
R827 1.2K
L807
R878 220K(1/4W)
R877 3.3K
R825 10K
R828 560
C826 10/25
R829 8.2K
Q805 2SA844D
Q806 2SC458C/D
R834 39K
R836 680
L812 15μH
C839 120P
R839 220
R842 120 1/4
C828 47/16
R832 220
R837 680
R830 2.2K
C840 47/16
R833 4.7K
R835 680
R841 82 1/4
Q807 2SC1213B/C
C829 470/16
R843 47

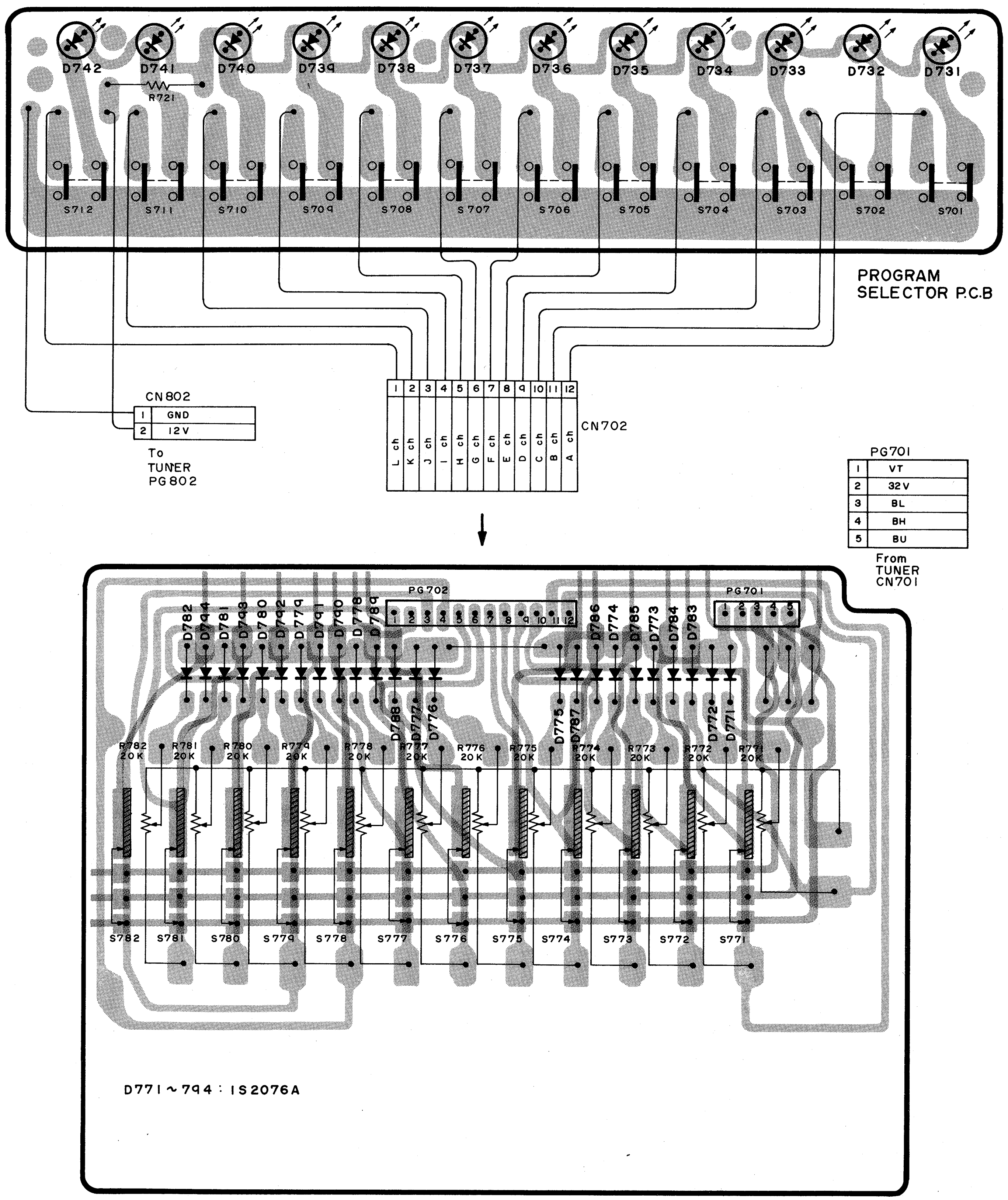

PROGRA
(Except fo
D742
S712

r the UK model)


AM SELECTOR
D731 D732 D733 D734 D735 D736 D737 D738 D739 D740 D741 D742
S701 S702 S703 S704 S705 S706 S707 S708 S709 S710 S711 S712
CN702
PG702
GRAM PRESET
S771 S772 S773 S774 S775 S776 S777 S778 S779 S780 S781 S782
D783 D771 D784 D772 D785 D773 D786 D774 D787 D775 D788 D776 D789 D777 D790 D778 D791 D779 D792 D780 D793 D781 D794 D782
R771 R772 R773 R774 R775 R776 R777 R778 R779 R780 R781 R782
CN2
TIMER ON
To POWER SW PG2
YEL
WHT
CN4
PB9V
TUNER 12V
To WIRING PG4
BRN
ORN
RED
BLU
BLK
YEL
CN975
12/15V
GND
To REGULATOR PG975
CN801
AUDIO IN
GND
VIDEO IN
WHT
RED
PG801
AUDIO OUT
VIDEO OUT
IC801 HA11215A
AFC
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RFAGC AMP
IF AMP
VIDEO
AGC
VIDEO LEVEL
IC881 HA1124D
FM DET
AUDIO AMP
SIF AMP
MF801 5.5MHz
CP851
CP852
CP801 HW2011
SAW
D871 1S2076
Q805 2SA844D
Q806 2SC458C/D
Q807 2SC1213B/C
L801 L802 L803 L804 L805 L806 L807 L812 L852 L882

PROGRAM SELECTOR/PROGRAM PRESET CIRCUIT BOARD DIAGRAM

(Except for the UK model)


D742 D741 D740 D739 D738 D737 D736 D735 D734 D733 D732 D731
R721
S712 S711 S710 S709 S708 S707 S706 S705 S704 S703 S702 S701
PROGRAM SELECTOR P.C.B
CN802
1 GND
2 12V
To TUNER PG802
CN702
L ch K ch J ch I ch H ch G ch F ch E ch D ch C ch B ch A ch
PG701
1 VT
2 32V
3 BL
4 BH
5 BU
From TUNER CN701
PG702
R782 20K R781 20K R780 20K R779 20K R778 20K R777 20K R776 20K R775 20K R774 20K R773 20K R772 20K R771 20K
S782 S781 S780 S779 S778 S777 S776 S775 S774 S773 S772 S771
D771 ~ 794 : 1S2076A

PROGRAM PRESET P.C.B

TUNER/IF CIRCUIT BOARD DIAGRAM (Except for the UK model)

Q805

B	6·8
C	3·3
E	7·5

Q806

B	3·3
C	9·6
E	2·7

Q807

B	2·6
C	9·7
E	2·0

PG801

AUDIO OUT	4
GND	3
VIDEO OUT	2
GND	1

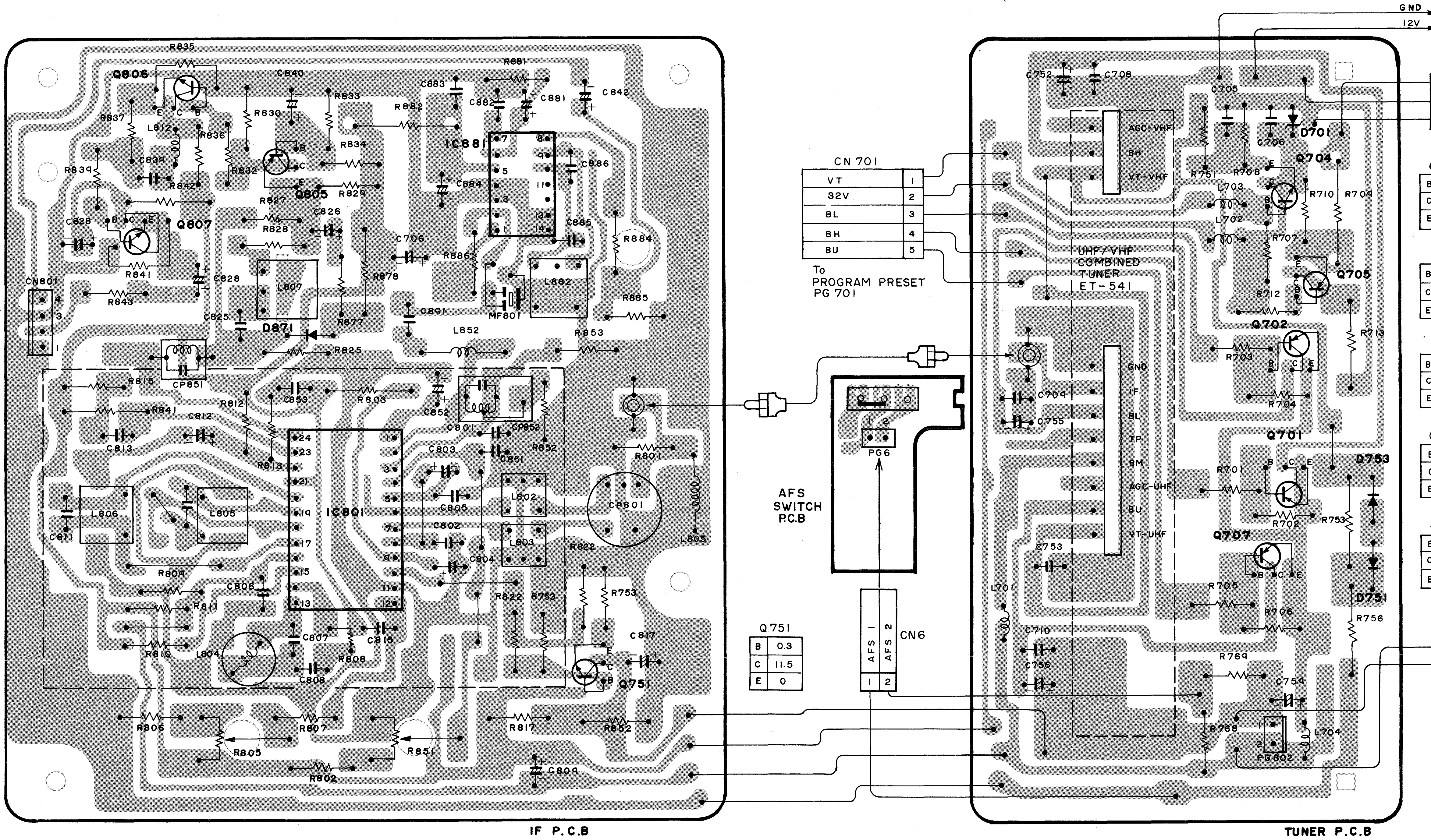
From 10P CONNECTOR CN801

IC881

7	5.7	8	4·5
6	2·3	9	3·8
5	11	10	3·8
4	0	11	0
3	0	12	0
2	2.0	13	0
1	2.0	14	0

IC801

24	8·6	1	5·2
23	12·5	2	4·9
22	3·2	3	4·9
21	12·5	4	0·8
20	4·0	5	4·9
19	6·9	6	3·7
18	6·9	7	3·7
17	4·0	8	4·9
16	7·2	9	6·6
15	2·1	10	0·9
14	5·0	11	0
13	5·0	12	8·9


GND
12V
To BOOSTER
Q806
R835
C840
R833
R881
C883
C882
C881
C842
R882
R837
L812
R836
R830
Q805
R834
IC881
C886
R839
C839
R842
R832
R829
C884
R827
C826
C828
Q807
R828
C706
R886
C885
R884
R841
R843
C828
L807
R878
L882
MF801
CN801
C825
D871
R877
C891
R885
L852
R853
R825
CP851
R815
C853
R803
C852
R841
R812
C812
C801
CP852
C813
R813
C803
R852
C851
IC801
L802
L806
L805
C805
CP801
C811
C802
L803
R822
L805
C804
R809
C806
R811
R822
R753
R753
R810
L804
C807
C815
C817
R808
C808
Q751
R806
R807
R817
R852
R805
R851
R802
C809
IF P.C.B
PG6
AFS SWITCH P.C.B
CN6
AFS 1
AFS 2
C752
C708
C705
C706
D701
AGC-VHF
BH
VT-VHF
R751
R708
Q704
L703
R710
R709
L702
R707
UHF/VHF COMBINED TUNER ET-541
Q705
R712
Q702
R713
R703
GND
IF
BL
TP
BM
AGC-UHF
BU
VT-UHF
C709
C755
R704
Q701
D753
R701
R702
R753
Q707
C753
D751
L701
R705
R706
R756
C710
C756
R769
C759
R768
L704
PG802
TUNER P.C.B

CN 701

VT	1
32V	2
BL	3
BH	4
BU	5

To PROGRAM PRESET PG 701

Q751

B	0.3
C	11.5
E	0

CN952

1	49V
2	12V
3	GND

To RECTIFIER PG952

Q705

B	32
C	9.1
E	32.6

Q704

B	11.5
C	32
E	11

Q703

B	11·8
C	12
E	12.5

Q702

B	0.2
C	0.3
E	12.5

Q701

B	0.2
C	0.3
E	12.5

CN976

1	12V
2	GND

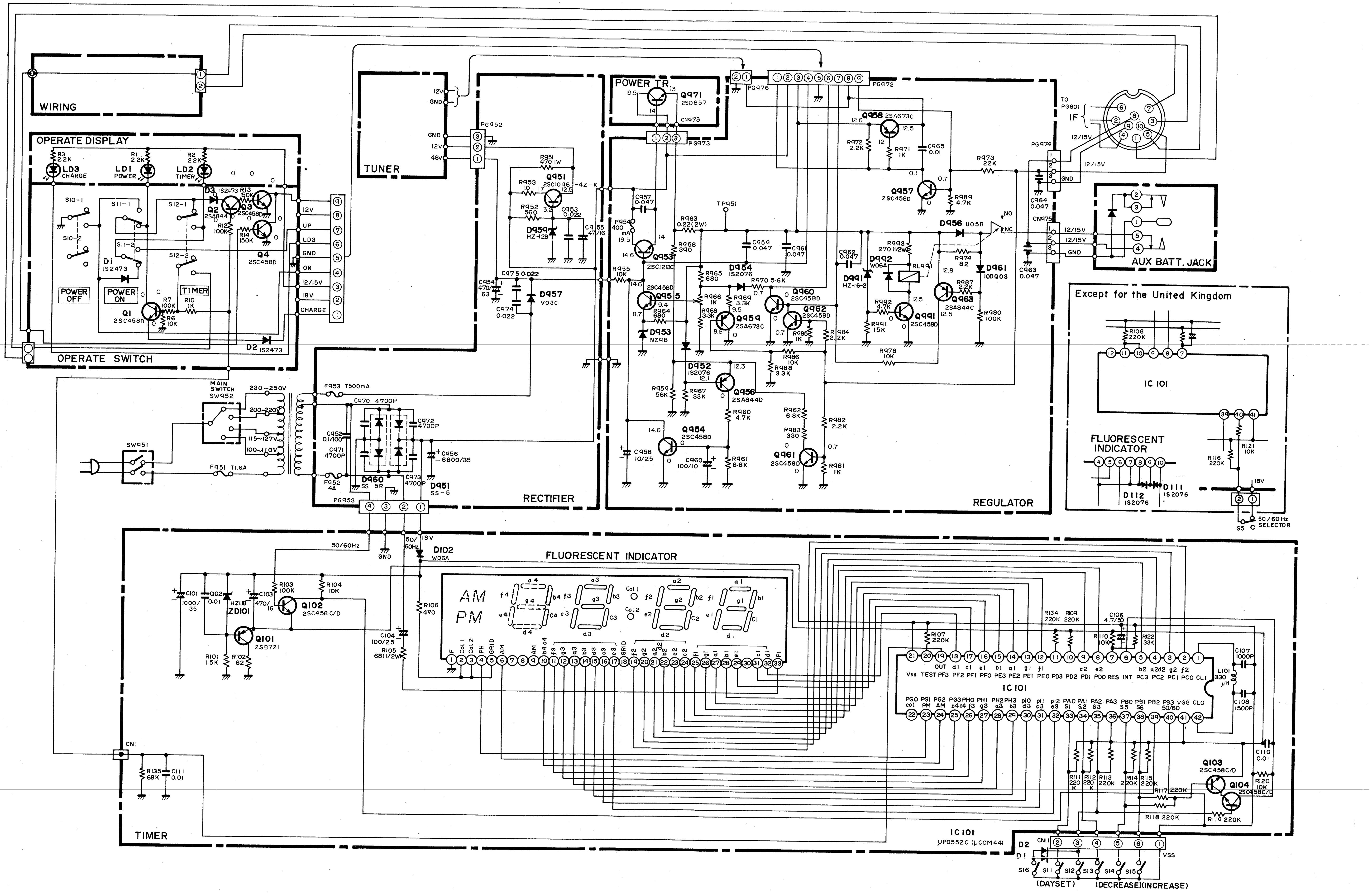
To REGULATOR PG976

PG802

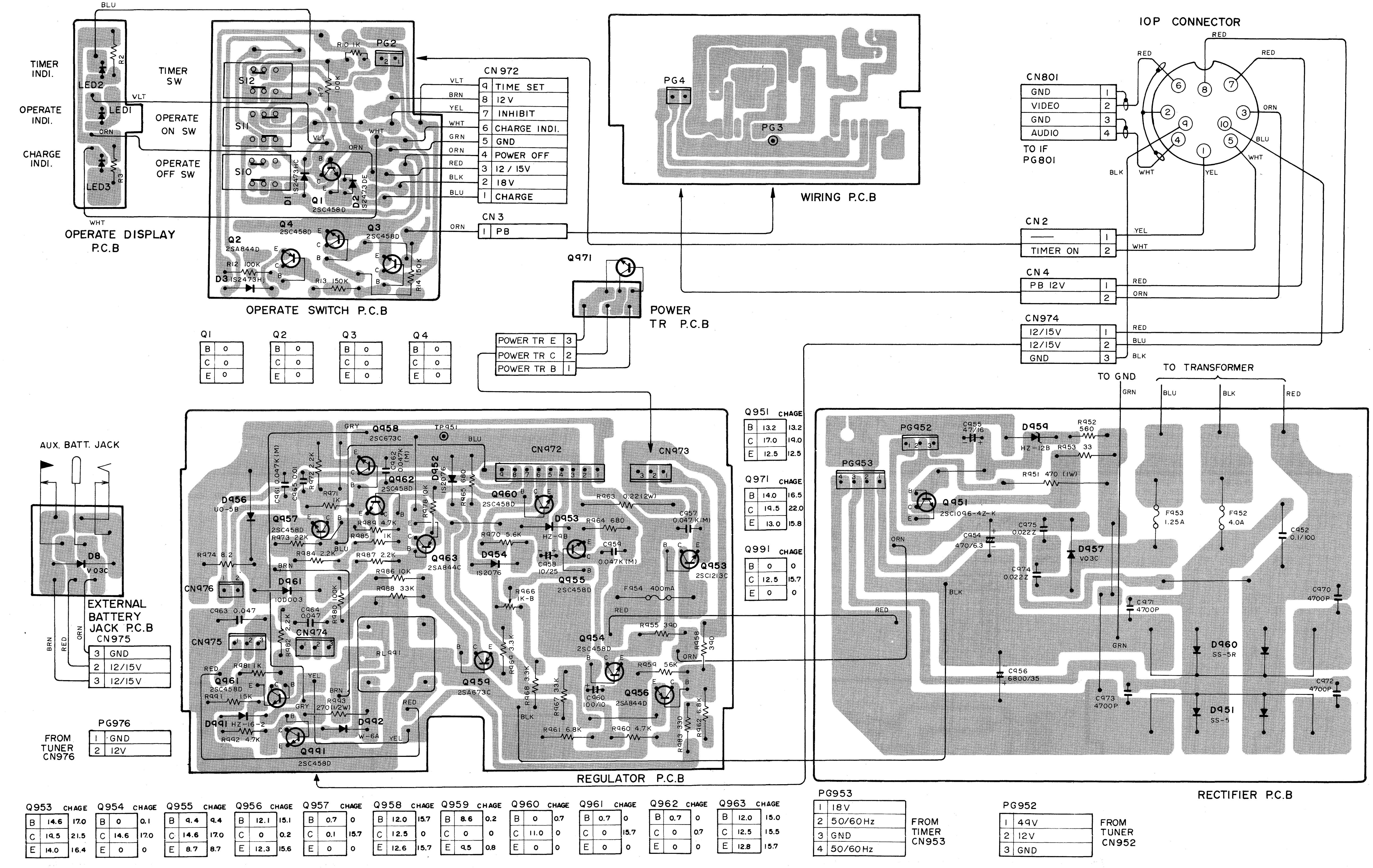
1	GND
2	12V

From PROGRAM SELECTOR CN802

TUNER/RECTIFIER/REGULATOR SCHEMATIC DIAGRAM


WIRING
OPERATE DISPLAY
OPERATE SWITCH
TUNER
RECTIFIER
REGULATOR
POWER TR
Q971 2SD857
AUX BATT. JACK
TO PG801 IF
12/15V
Except for the United Kingdom
IC 101
FLUORESCENT INDICATOR
D111 1S2076
D112 1S2076
50/60Hz SELECTOR
S5
MAIN SWITCH SW952
SW951
230~250V
200~220V
115~127V
100~110V
F951 T1.6A
F952 4A
F953 T500mA
PG953
PG952
PG972
PG973
PG974
PG976
CN973
CN975
TIMER
FLUORESCENT INDICATOR
AM
PM
IC101 μPD552C (μCOM44)
CN1
CN11
(DAYSET)
(DECREASE)(INCREASE)
LD3 CHARGE
LD1 POWER
LD2 TIMER
POWER OFF
POWER ON
TIMER
12V
UP
LD3
GND
ON
12/15V
18V
CHARGE
Q1 2SC458D
Q2 2SA844D
Q3 2SC458D
Q4 2SC458D
Q951 2SC1096
Q953 2SC1213C
Q954 2SC458D
Q955 2SC458D
Q956 2SA844D
Q957 2SC458D
Q958 2SA673C
Q959 2SA673C
Q960 2SC458D
Q961 2SC458D
Q962 2SC458D
Q963 2SA844C
Q991 2SC458D
D956 U05B
D960 SS-5R
D951 SS-5
D957 V03C
D959 HZ-12B
D953 NZ9B
D952 1S2076
D954 1S2076
D961 10DQ03
D991 HZ-16-2
D992 W06A
RL991
C956 6800/35
Q101 2SB721
Q102 2SC458C/D
Q103 2SC458C/D
Q104 2SC458C/D
ZD101 HZ18
D102 W06A
C101 1000/35
L101 330μH
C107 1000P
C108 1500P
50/60Hz
18V
GND

RECTIFIER/REGULATOR CIRCUIT BOARD DIAGRAM


TIMER INDI.
OPERATE INDI.
CHARGE INDI.
LED2
LED1
LED3
R2
R3
TIMER SW
OPERATE ON SW
OPERATE OFF SW
OPERATE DISPLAY P.C.B
S12
S11
S10
R10 1K
PG2
R7 100K
D1 IS2473HC
D2 IS2473DE
Q1 2SC458D
Q2 2SA844D
Q3 2SC458D
Q4 2SC458D
R12 100K
R13 150K
R14 150K
D3 IS2473HJ
OPERATE SWITCH P.C.B
BLU
VLT
ORN
WHT
BRN
YEL
GRN
RED
BLK
PG4
PG3
WIRING P.C.B
Q971
POWER TR P.C.B
IOP CONNECTOR
TO IF PG801
TO GND
TO TRANSFORMER
AUX. BATT. JACK
D8 V03C
EXTERNAL BATTERY JACK P.C.B
Q958 2SC673C
TP951
Q962 2SC458D
D952 IS2076
Q960 2SC458D
D956 U0-5B
Q957 2SC458D
Q963 2SA844C
D953 HZ-4B
D954 IS2076
Q955 2SC458D
Q953 2SC1213C
D961 10D003
CN976
CN972
CN973
CN974
CN975
RL991
Q954 2SC458D
Q959 2SA673C
Q956 2SA844D
Q961 2SC458D
D991 HZ-16-2
D992 W-6A
Q991 2SC458D
C961 0.047K(M)
C965 0.01
R972 2.2K
R971 1K
C962 0.047K(M)
R978 10K
R965 680
R963 0.22(2W)
R964 680
C957 0.047K(M)
R989 4.7K
R985 1K
R973 22K
R970 5.6K
C959 0.047K(M)
C958 10/25
R974 8.2
R984 2.2K
R987 2.2K
R986 10K
R988 33K
R966 1K-B
F954 400mA
C963 0.047
C964 0.047
R480 100K
R982 2.2K
R955 390
R458 390
R964 3.3K
R968 3.3K
R967 33K
C960 100/10
R959 56K
R981 1K
R991 1.5K
R993 270(1/2W)
R992 4.7K
R961 6.8K
R960 4.7K
R983 330
R462 6.8K
REGULATOR P.C.B
PG952
PG953
C955 47/16
D959 HZ-12B
R952 560
R953 33
R951 470 (1W)
Q951 2SC1096-4Z-K
C975 0.022Z
C954 470/6.3
C974 0.022Z
D957 V03C
F953 1.25A
F952 4.0A
C952 0.1/100
C971 4700P
C970 4700P
D960 SS-5R
C956 6800/35
C973 4700P
D951 SS-5
C972 4700P
RECTIFIER P.C.B

CN972

9	TIME SET
8	12 V
7	INHIBIT
6	CHARGE INDI.
5	GND
4	POWER OFF
3	12 / 15V
2	18V
1	CHARGE

CN 3

1	PB

CN801

GND	1
VIDEO	2
GND	3
AUDIO	4

CN2

——	1
TIMER ON	2

CN4

PB 12V	1
	2

CN974

12/15V	1
12/15V	2
GND	3

POWER TR E	3
POWER TR C	2
POWER TR B	1

CN975

3	GND
2	12/15V
3	12/15V

FROM TUNER CN976

PG976

1	GND
2	12V

FROM TIMER CN953

PG953

1	18V
2	50/60Hz
3	GND
4	50/60Hz

FROM TUNER CN952

PG952

1	49V
2	12V
3	GND

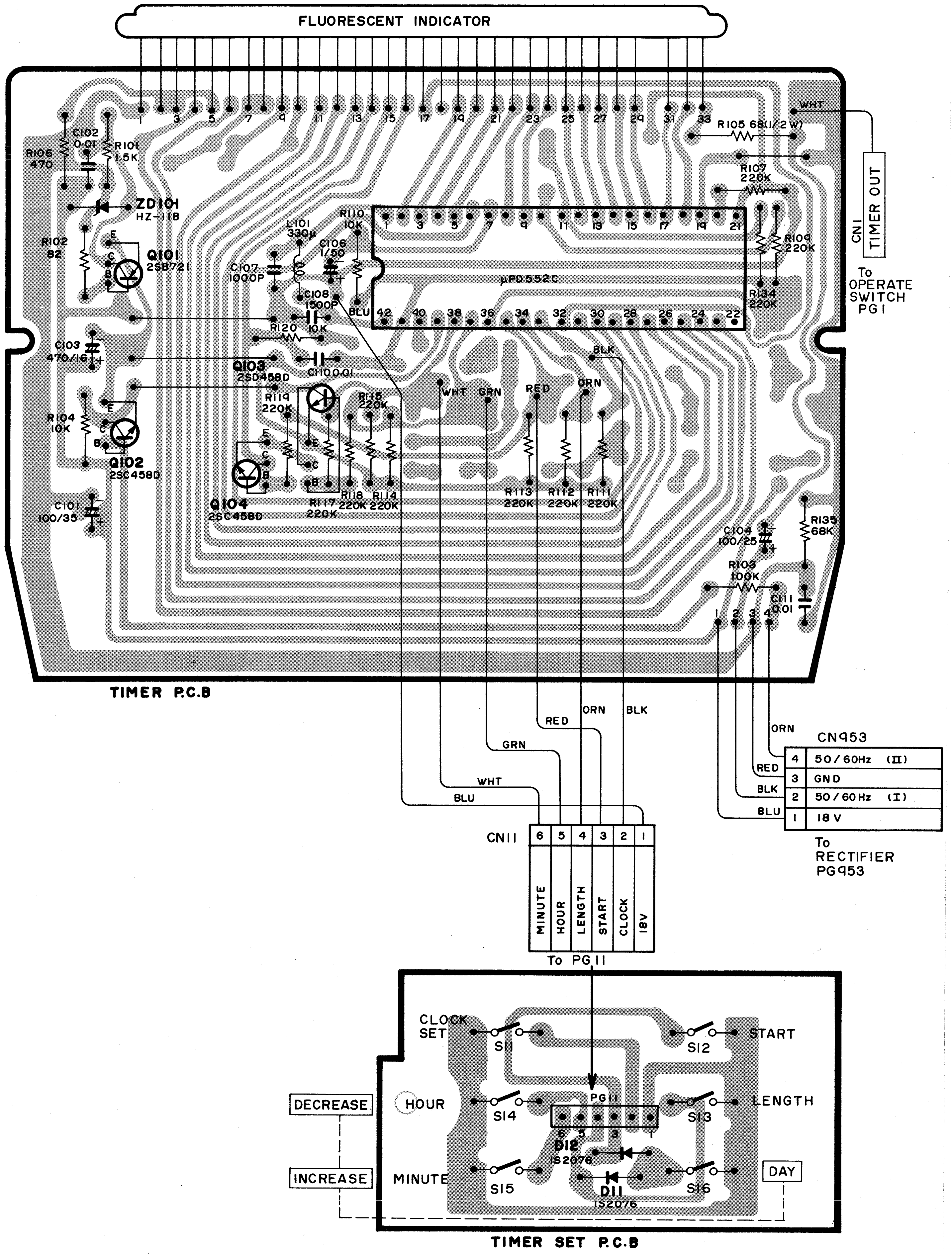
	Q1	Q2	Q3	Q4
B	0	0	0	0
C	0	0	0	0
E	0	0	0	0

	Q951	CHAGE	Q971	CHAGE	Q991	CHAGE
B	13.2	13.2	14.0	16.5	0	0
C	17.0	19.0	19.5	22.0	12.5	15.7
E	12.5	12.5	13.0	15.8	0	0

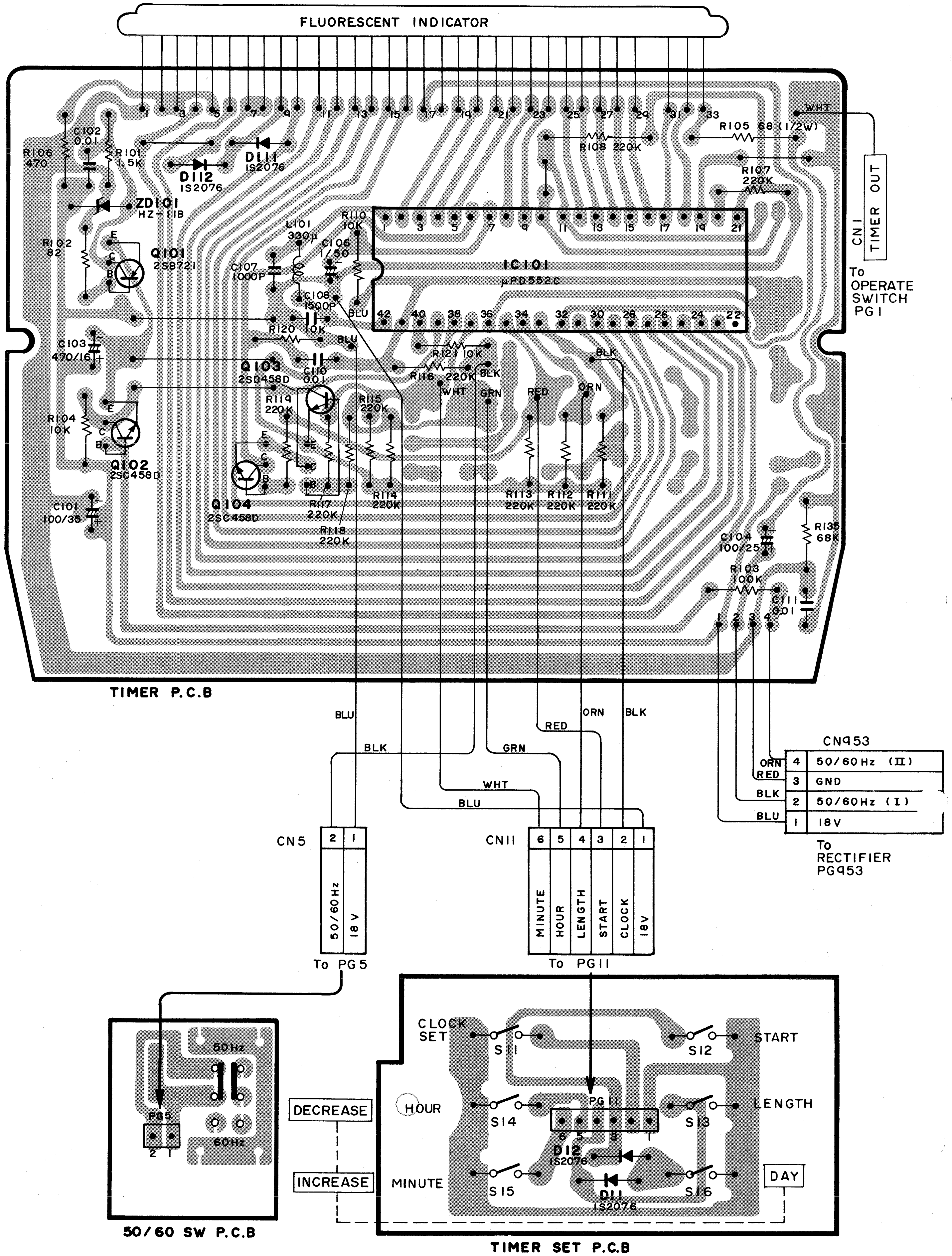
	Q953	CHAGE	Q954	CHAGE	Q955	CHAGE	Q956	CHAGE	Q957	CHAGE
B	14.6	17.0	0	0.1	9.4	9.4	12.1	15.1	0.7	0
C	19.5	21.5	14.6	17.0	14.6	17.0	0	0.2	0.1	15.7
E	14.0	16.4	0	0	8.7	8.7	12.3	15.6	0	0

	Q958	CHAGE	Q959	CHAGE	Q960	CHAGE	Q961	CHAGE	Q962	CHAGE	Q963	CHAGE
B	12.0	15.7	8.6	0.2	0	0.7	0.7	0	0.7	0	12.0	15.0
C	12.5	0	0	0	11.0	0	0	15.7	0	0.7	12.5	15.5
E	12.6	15.7	9.5	0.8	0	0	0	0	0	0	12.8	15.7

TIMER CIRCUIT BOARD DIAGRAM (For the UK model)


FLUORESCENT INDICATOR
TIMER P.C.B
μPD552C
ZD101 HZ-11B
Q101 2SB721
Q102 2SC458D
Q103 2SD458D
Q104 2SC458D
L101 330μ
R101 1.5K
R102 82
R104 10K
R105 68(1/2W)
R106 470
R107 220K
R109 220K
R110 10K
R111 220K
R112 220K
R113 220K
R114 220K
R115 220K
R117 220K
R118 220K
R119 220K
R120 10K
R103 100K
R134 220K
R135 68K
C101 100/35
C102 0.01
C103 470/16
C104 100/25
C106 1/50
C107 1000P
C108 1500P
C110 0.01
C111 0.01
CN1 TIMER OUT
To OPERATE SWITCH PG1
WHT
BLU
GRN
RED
ORN
BLK
CN953
4 50/60Hz (II)
3 GND
2 50/60Hz (I)
1 18V
To RECTIFIER PG953
CN11
6 MINUTE
5 HOUR
4 LENGTH
3 START
2 CLOCK
1 18V
To PG11
CLOCK SET
S11
S12
START
HOUR
S14
S13
LENGTH
PG11
DECREASE
INCREASE
MINUTE
S15
S16
DAY
D12 1S2076
D11 1S2076
TIMER SET P.C.B

TIMER CIRCUIT BOARD DIAGRAM (Except for the UK model)


FLUORESCENT INDICATOR
TIMER P.C.B
IC101 μPD552C
ZD101 HZ-11B
D111 1S2076
D112 1S2076
Q101 2SB721
Q102 2SC458D
Q103 2SD458D
Q104 2SC458D
L101 330μ
R101 1.5K
R102 82
R104 10K
R105 68 (1/2W)
R106 470
R107 220K
R108 220K
R110 10K
R111 220K
R112 220K
R113 220K
R114 220K
R115 220K
R116 220K
R117 220K
R118 220K
R119 220K
R120 10K
R121 10K
R103 100K
R135 68K
C101 100/35
C102 0.01
C103 470/16
C104 100/25
C106 1/50
C107 1000P
C108 1500P
C110 0.01
C111 0.01
CN1 TIMER OUT
To OPERATE SWITCH PG1
WHT
BLU
GRN
RED
ORN
BLK
CN953
4 50/60Hz (II)
3 GND
2 50/60Hz (I)
1 18V
To RECTIFIER PG953
CN5
2 50/60Hz
1 18V
To PG5
CN11
6 MINUTE
5 HOUR
4 LENGTH
3 START
2 CLOCK
1 18V
To PG11
50Hz
60Hz
PG5
50/60 SW P.C.B
CLOCK SET
S11
S12
START
HOUR
S14
S13
LENGTH
PG11
DECREASE
INCREASE
MINUTE
S15
S16
DAY
D12 1S2076
D11 1S2076
TIMER SET P.C.B

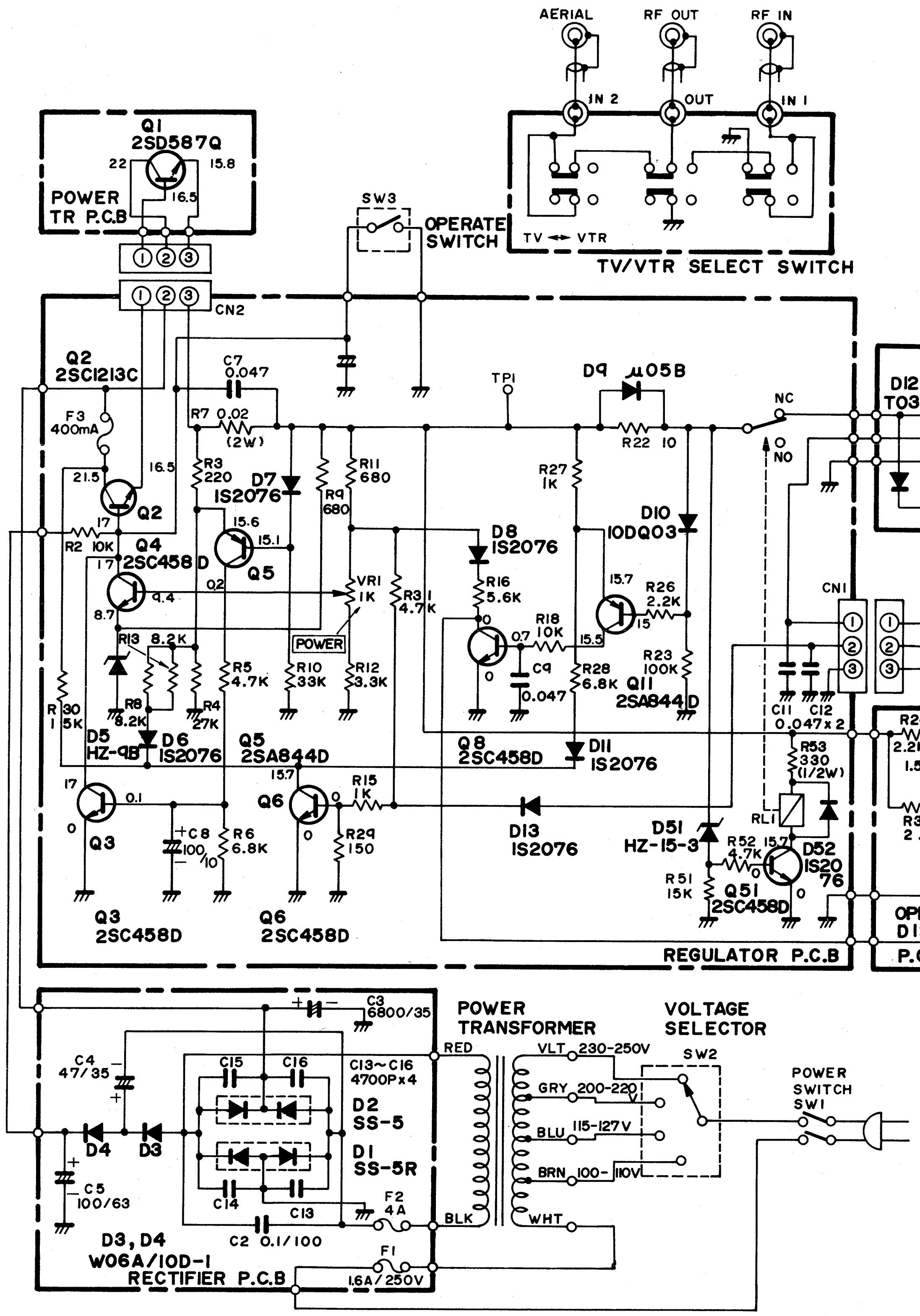
REPLACEMENT PARTS LIST — TUNER

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C107	0249731	CERAMIC, DISC CAPACITOR 0.001 MICRO F PLU
C108	0249732	CERAMIC, DISC CAPACITOR 1500PF +- 10%
C956	0256128	ELECTROLYTIC 6800UF 35V
		RESISTORS
R805	0151187	VARIABLE 5KOHM
R851	0151187	VARIABLE 5KOHM
R966	5007162	SEMI VARIABLE 1 KOHM
		SEMI-CONDUCTORS
D 1-3	5330573	DIODE SILICON 1S2473 300MHZ 300MW
D 8	5330001	RECTIFIER SILICON V03C 60H
D 11-12	5330131	DIODE 1S2076
D111-112	5330131	DIODE 1S2076 (E)
D701	5350611	IC UPC574J
D731-742	5380541	LED LN21RCP
D751	5330131	DIODE 1S2076
D753	5330312	DIODE-ZENER SILICON
D871	5330131	DIODE 1S2076
D951	5331401	DIODE SS-5
D952	5330131	DIODE 1S2076
D953	5330322	DIODE-ZENER SILICON TR-9S 10K
D954	5330131	DIODE 1S2076
D956	5330501	DIODE SILICON U0-5B 60HZ 3MW
D957	5330001	RECTIFIER SILICON V03C 60H
D959	5330532	DIODE SILICON HZ-12B 1.0M
D960	5331402	DIODE SS-5R
D961	5331441	DIODE 10DQ03
D991	5330562	DIODE HZ16-2
D992	5330341	RECTIFIER SILICON W0-6A 60H
IC101	5359861	IC MPD552C-023
IC801	5351662	IC HA11215A
IC881	5351352	IC HA1124A
LD 1-3	5380301	LED GL4PR2
Q 1	5320064	TRANSISTOR 2SC458D
Q 2	5321252	2SA844D
Q 3-4	5320064	TRANSISTOR 2SC458D

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
Q101	5322361	TRANSISTOR 2SB721
Q102-104	5320064	TRANSISTOR 2SC458D
Q701-703	5320593	TRANSISTOR 2SA673C (E)
Q704	5320623	TRANSISTOR SILICON 2SC1213A-C 80MHZ 400M
Q705	5320593	TRANSISTOR 2SA673C
Q751	5320069	TRANSISTOR 2SC458CD
Q805	5321252	2SA844D
Q806	5320069	TRANSISTOR 2SC458CD
Q807	5320613	TRANSISTOR 2SC1213C
Q951	5321231	TRANSISTOR SILICON 2SC1096 60MHZ 2W
Q953	5320613	TRANSISTOR 2SC1213C
Q954-955	5320064	TRANSISTOR 2SC458D
Q956	5321252	2SA844D
Q957	5320064	TRANSISTOR 2SC458D
Q958-959	5320593	TRANSISTOR SILICON 2SA673C 80M
Q960-962	5320064	TRANSISTOR 2SC458D
Q963	5321251	TRANSISTOR SILICON 2SA844C 200MHZ 200MW
Q971	5322391	TRANSISTOR 2SD587Q
Q991	5320064	TRANSISTOR 2SC458D
		SEMI-CONDUCTORS
ZD101	5330552	ZENNER DIODE HZ11B
		COILS
CP851-852	2161502	TRAP COIL (E)
CP851-852	2161503	TRAP COIL (BS)
L101	5152094	CHOKE COIL 330MICRO H
L701-703	2120482	FILTER COIL
L704	2120482	FILTER COIL (E)
L801	2122161	FILTER COIL
L802-803	2161844	COIL
L804	2142024	MOLD IFT
L805	2141359	CARRIER FILTER COIL (BS)
L805	2142065	CARRIER FILTER COIL (E)
L806	2142019	AFC COIL
L807	5123821	COIL
L852	2121225	PEAKING COIL
L882	2142051	COIL
MF801	2140911	CERAMIC FILTER (E)
MF801	2140921	CERAMIC FILTER (BS)

SYMBOL-NO	P-NO	DESCRIPTION
		MISCELLANEOUS
	2423461	TUNER ET-541 (E)
	2423501	TUNER ET-546 (BS)
	5310191	CLOCK DISPLAY (E)
	5310201	FLOVORSCENT INDICATOR (BS)
	5585571	BOOSTER (E)
	5585575	BOOSTER (BS)
	5605051	ROTARY SWITCH
	5634381	PUSH SWITCH
	5678101	DC JACK
	5721061	FUSE 1.6A
CP801	2300031	COMPOUND COMPONENT SAW FILTER (BS)
CP801	2300041	COMPOUND COMPONENT SAW FILTER (E)
F952	5721062	FUSE 4A 250V
F953	5720172	FUSE 250V 0.4A
F953	5720173	FUSE 500MA
RL991	5641171	RELAY
S 5	5623571	SWITCH (E)
S 6	5633572	PUSH SWITCH
S 10-12	5634291	PUSH SWITCH
S 11-16	5633561	SWITCH

ADAPTOR SCHEMATIC DIAGRAM

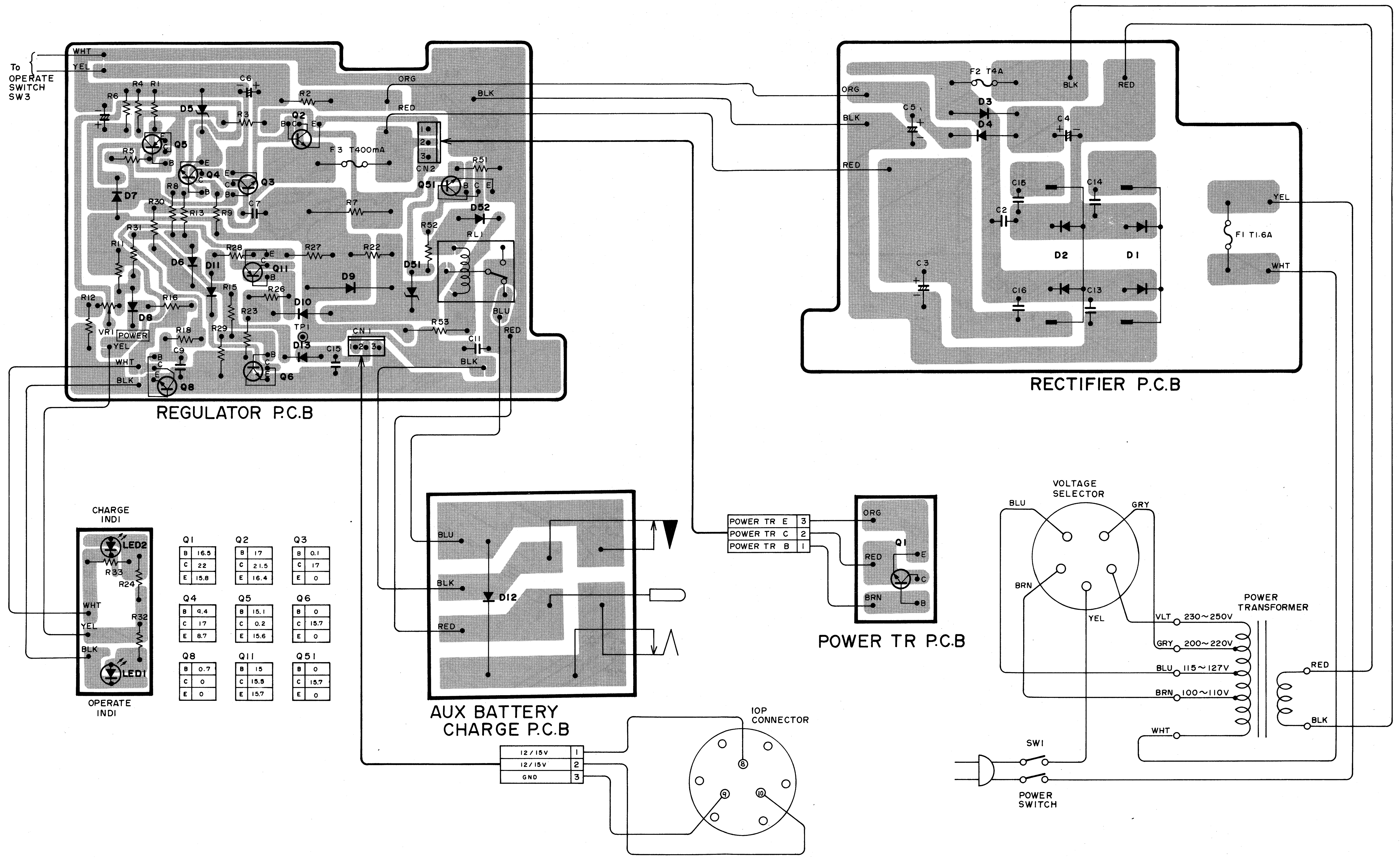

AERIAL
RF OUT
RF IN
IN 2
OUT
IN 1
TV ↔ VTR
TV/VTR SELECT SWITCH
SW3
OPERATE SWITCH
Q1
2SD587Q
22
15.8
16.5
POWER TR P.C.B
①②③
CN2
Q2
2SC1213C
C7
0.047
R7 0.02
(2W)
F3
400mA
21.5
16.5
17
Q2
R2 10K
Q4
2SC458D
9.4
8.7
R3
220
D7
1S2076
15.6
15.1
Q5
R11
680
R9
680
VR1
1K
R31
4.7K
POWER
R13 8.2K
R8
8.2K
R5
4.7K
R10
33K
R12
3.3K
R4
27K
R30
15K
D5
HZ-9B
D6
1S2076
Q5
2SA844D
15.7
Q3
0.1
C8
100/10
R6
6.8K
Q6
R15
1K
R29
150
Q3
2SC458D
Q6
2SC458D
TP1
D9 µ05B
R22 10
NC
NO
R27
1K
D10
10DQ03
D8
1S2076
R16
5.6K
R18
10K
15.7
R26
2.2K
15.5
C9
0.047
R28
6.8K
R23
100K
Q11
2SA844D
Q8
2SC458D
D11
1S2076
D13
1S2076
D51
HZ-15-3
R52
4.7K
15.7
R51
15K
Q51
2SC458D
RL1
R53
330
(1/2W)
D52
1S2076
C11 C12
0.047×2
CN1
REGULATOR P.C.B
D12
T03C
AUX BATTERY
PLG
12/15V
GND
12/15V
R24
2.2K
R33
1.5K
R32
2.2K
CHARGE LED2
POWER LED1
OPERATE DISPLAY P.C.B
C3
6800/35
C4
47/35
C15
C16
C13~C16
4700P×4
D2
SS-5
D1
SS-5R
D4
D3
C5
100/63
C14
C13
F2
4A
C2 0.1/100
F1
1.6A/250V
D3, D4
W06A/10D-1
RECTIFIER P.C.B
POWER TRANSFORMER
RED
BLK
VOLTAGE SELECTOR
SW2
VLT 230-250V
GRY 200-220
BLU 115-127V
BRN 100-110V
WHT
POWER SWITCH
SW1

REPLACEMENT PARTS LIST — ADAPTOR

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C 3	0256128	ELECTROLYTIC 6800UF 35V
		RESISTORS
VR 1	5007162	SEMI VARIABLE 1 KOHM
		SEMI-CONDUCTORS
D 1	5331402	DIODE SS-5R
D 2	5331401	DIODE SS-5
D 3-4	5330341	RECTIFIER SILICON W0-6A 60H
D 5	5330322	DIODE-ZENER SILICON TR-9S 10K
D 6-8	5330131	DIODE 1S2076
D 9	5330501	DIODE SILICON U0-5B 60HZ 3MW
D 10	5331441	DIODE 10DQ03
D 11	5330131	DIODE 1S2076
D 12	5330001	RECTIFIER SILICON V03C 60H
D 13	5330131	DIODE 1S2076
D 51	5330542	DIODE HZ15-3
D 52	5330131	DIODE 1S2076
LED 1-2	5380301	LED GL4PR2

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
Q 1	5322391	TRANSISTOR 2SD587Q
Q 2	5320613	TRANSISTOR 2SC1213C
Q 3-4	5320064	TRANSISTOR 2SC458D
Q 5	5321252	2SA844D
Q 6	5320064	TRANSISTOR 2SC458D
Q 8	5320064	TRANSISTOR 2SC458D
Q 11	5321252	2SA844D
Q 51	5320064	TRANSISTOR 2SC458D
		MISCELLANEOUS
	5678101	DC JACK
F 1	5720179	FUSE 1A
F 2	5721062	FUSE 4A 250V
F 3	5720172	FUSE 250V 0.4A
RL 1	5641171	RELAY
SW 1	5602021	SEESAW SWITCH
SW 2	5605051	ROTARY SWITCH
SW 3	5634158	PUSH SWITCH

ADAPTOR CIRCUIT BOARD DIAGRAM

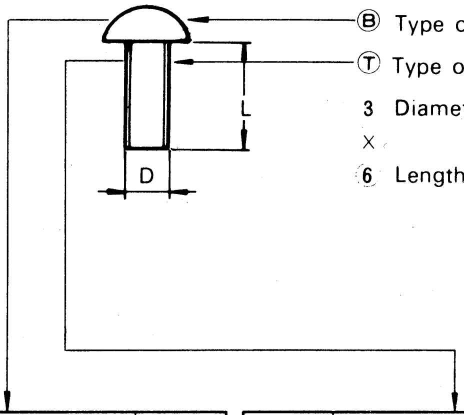

To OPERATE SWITCH SW3
WHT
YEL
REGULATOR P.C.B
R1
R2
R3
R4
R5
R6
R7
R8
R9
R11
R12
R13
R15
R16
R18
R22
R23
R26
R27
R28
R29
R30
R31
R51
R52
R53
C6
C7
C9
C11
C15
D5
D6
D7
D8
D9
D10
D11
D13
D51
D52
Q2
Q3
Q4
Q5
Q6
Q8
Q11
Q51
F3 T400mA
CN1
CN2
RL1
TP1
VR1
POWER
ORG
RED
BLK
BLU
RECTIFIER P.C.B
F2 T4A
F1 T1.6A
D1
D2
D3
D4
C2
C3
C4
C5
C13
C14
C15
C16
CHARGE INDI
LED2
LED1
R24
R32
R33
OPERATE INDI
AUX BATTERY CHARGE P.C.B
D12
POWER TR P.C.B
Q1
POWER TR E 3
POWER TR C 2
POWER TR B 1
12/15V 1
12/15V 2
GND 3
IOP CONNECTOR
VOLTAGE SELECTOR
GRY
BRN
POWER TRANSFORMER
VLT 230~250V
GRY 200~220V
BLU 115~127V
BRN 100~110V
WHT
SW1
POWER SWITCH

	Q1	Q2	Q3	Q4	Q5	Q6	Q8	Q11	Q51
B	16.5	17	0.1	9.4	15.1	0	0.7	15	0
C	22	21.5	17	17	0.2	15.7	0	15.5	15.7
E	15.8	16.4	0	8.7	15.6	0	0	15.7	0

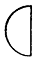
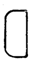
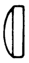
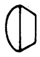
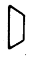
EXPLODED VIEWS

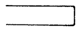
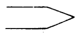
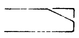
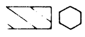
SCREW CLASSIFICATION

Example: BT3 × 6

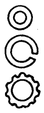
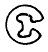
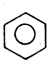


Ⓑ Type of head
Ⓣ Type of threaded section
3 Diameter (D)
×
6 Length (L)

Abbre-viation	Name	Shape
No symbol	Brazier head	
P	Pan head	
B	Binding head	
O	Oval countersunk head	
F	Flat countersunk head	

Abbre-viation	Name	Shape
No symbol	Machine (clamps without tapping)	
t	Tapping (clamps with tapping) Type 1	
T	Tapping (clamps with tapping) Type 2	
f	Forming tight (for metal)	
Note	Since the forming tight screw tightens while self-tapping, machine screws can be replaced by tapping screws.	

Washers and Nuts

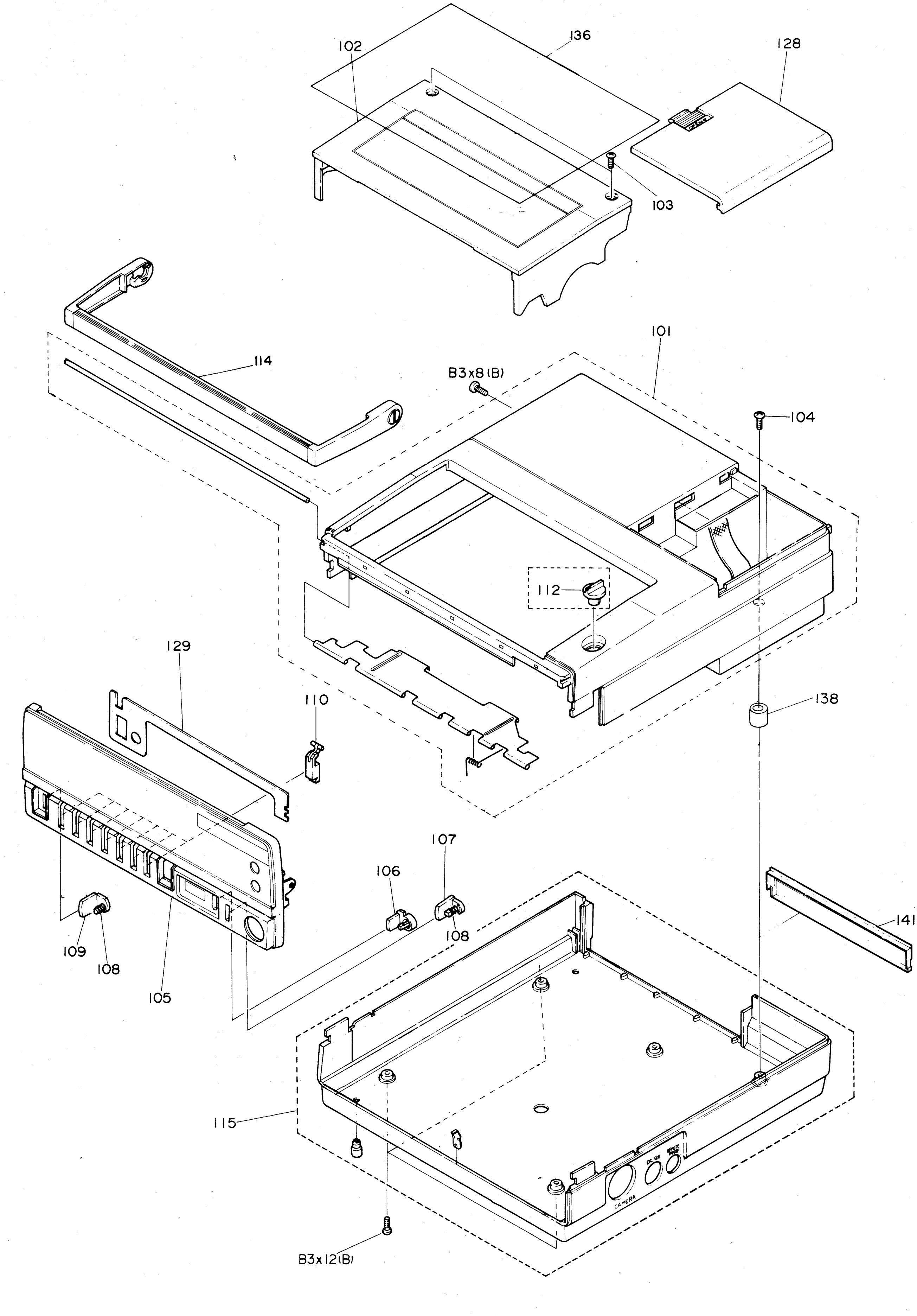
Abbre-viation	Name	Shape
W SW LW	Washer Spring washer Locking washer	
E	E-ring	
N	Nut	
Note	Internal dia. is indicated for nuts and washers	

LUBRICATION

Lubrication points are shown in the exploded view diagrams by marks▨.
Lubricants shown in the diagram are as follows.

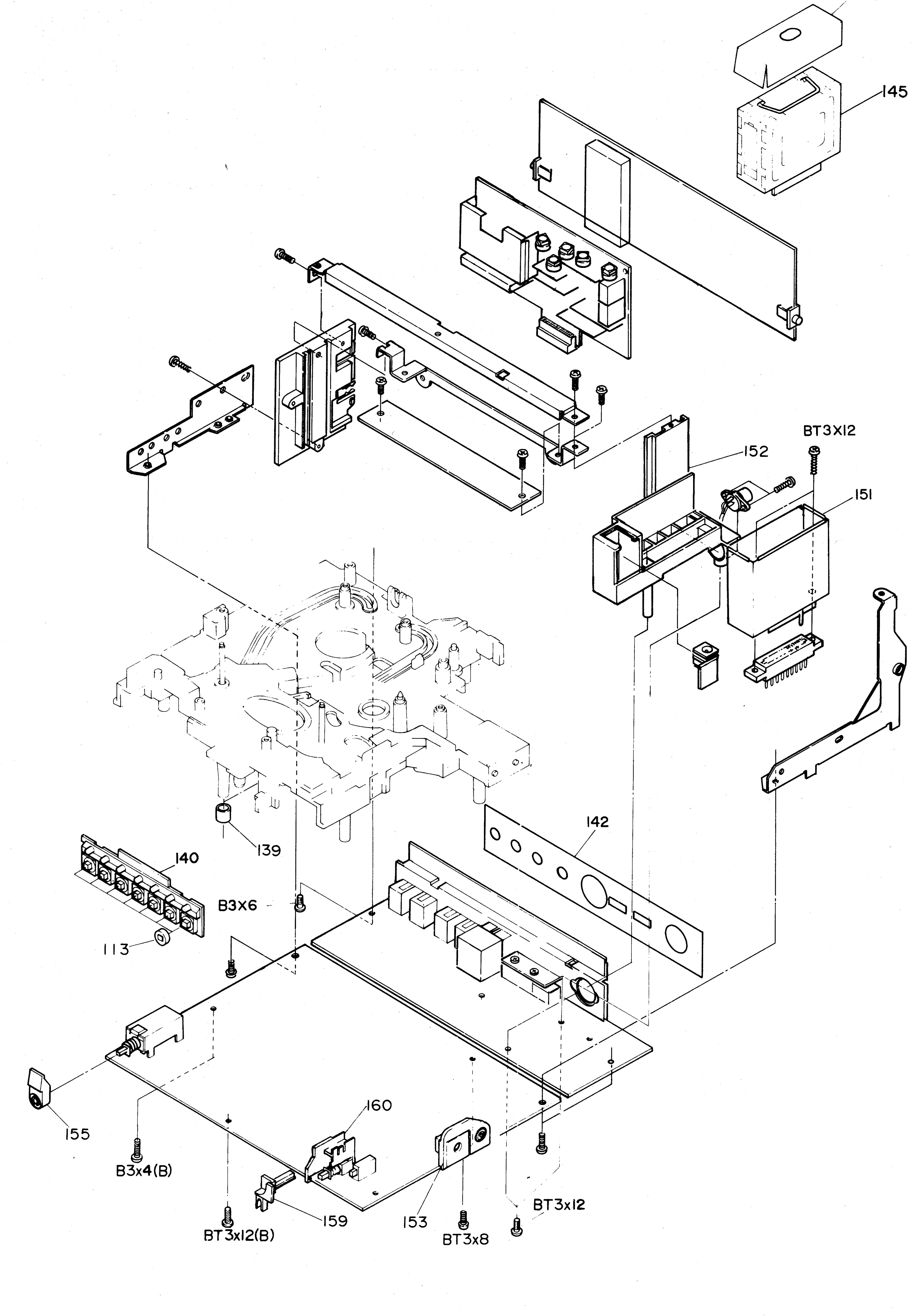
Ⓟ	Pan motor oil (× 10W-40)
Ⓢ	Sonic slider oil (# 1600)
Ⓢi	Silicone grease (KS-64)
Ⓗ	Hitazol (MO-138)
No symbol	Froil (GB-TS-1)

CABINET SECTION (I) — DECK

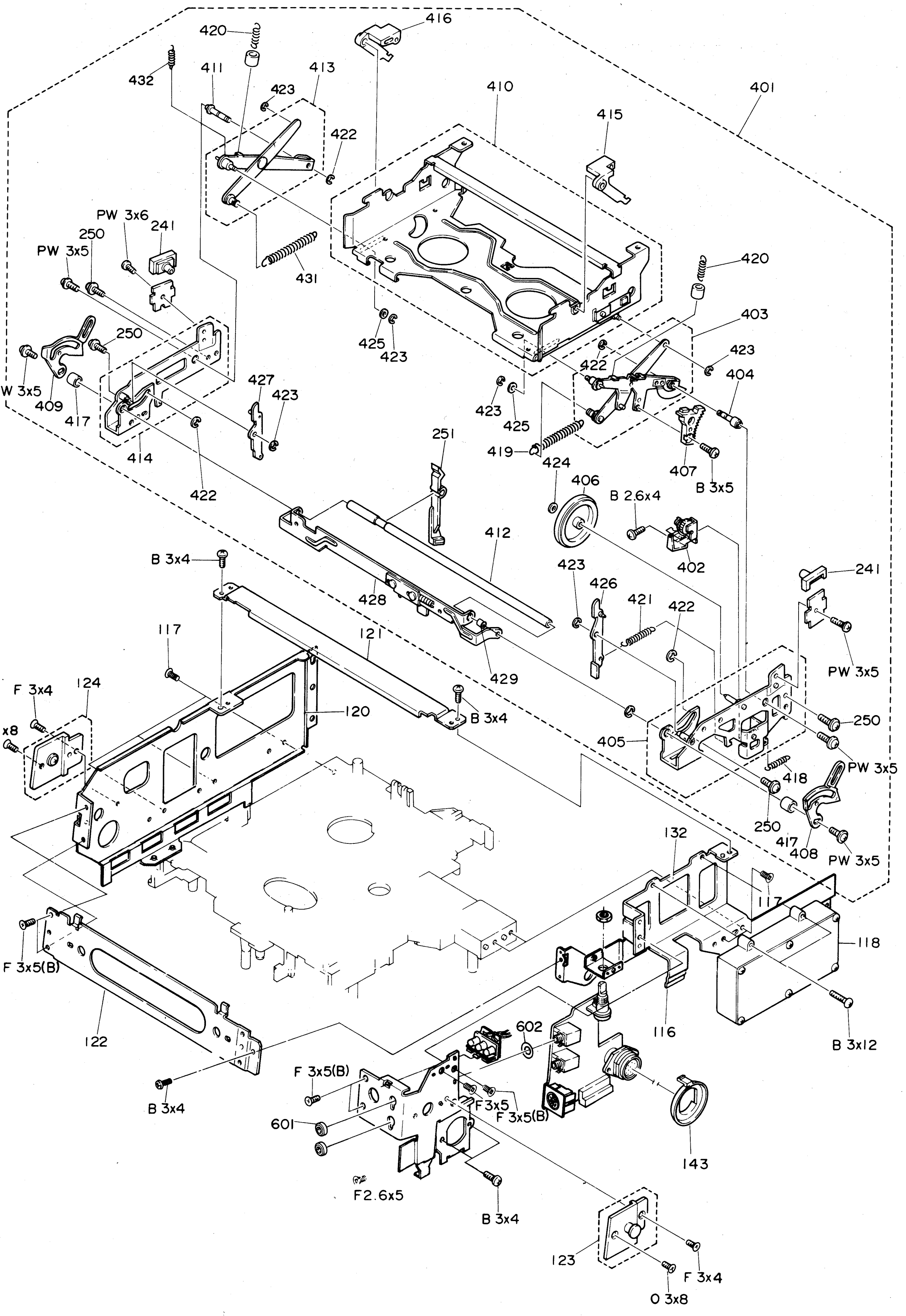


136
102
128
103
114
101
B3x8(B)
104
112
129
110
138
107
106
141
108
109
108
105
115
CAMERA
DC 12V
REMOTE
B3x12(B)

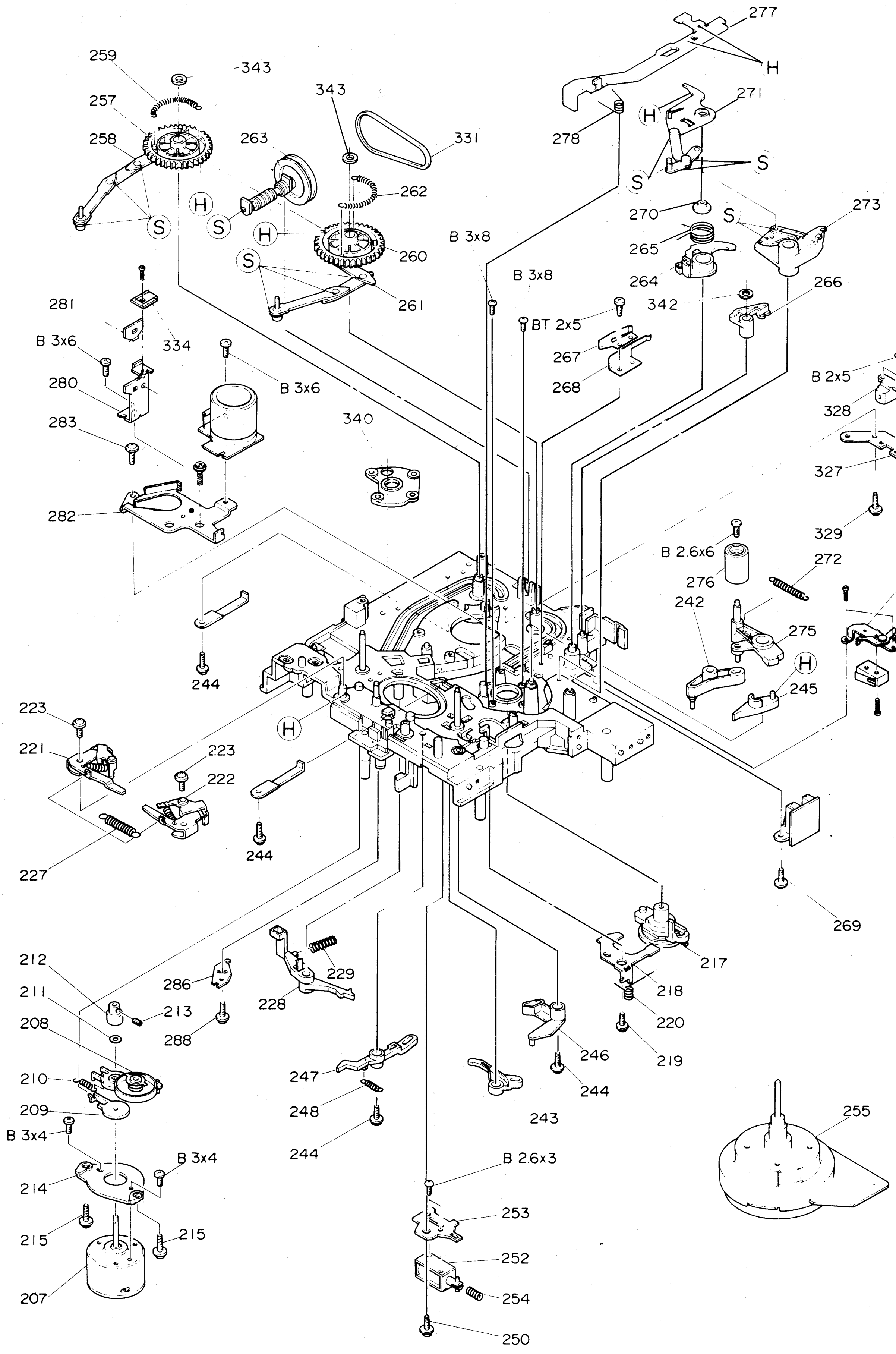
CABINET SECTION (II) — DECK


135
145
BT3X12
152
151
142
140
139
B3X6
113
155
160
B3x4(B)
BT3x12(B)
159
153
BT3x8
BT3x12

CHASSIS ASSEMBLY/CASSETTE HOUSING ASSEMBLY — DECK

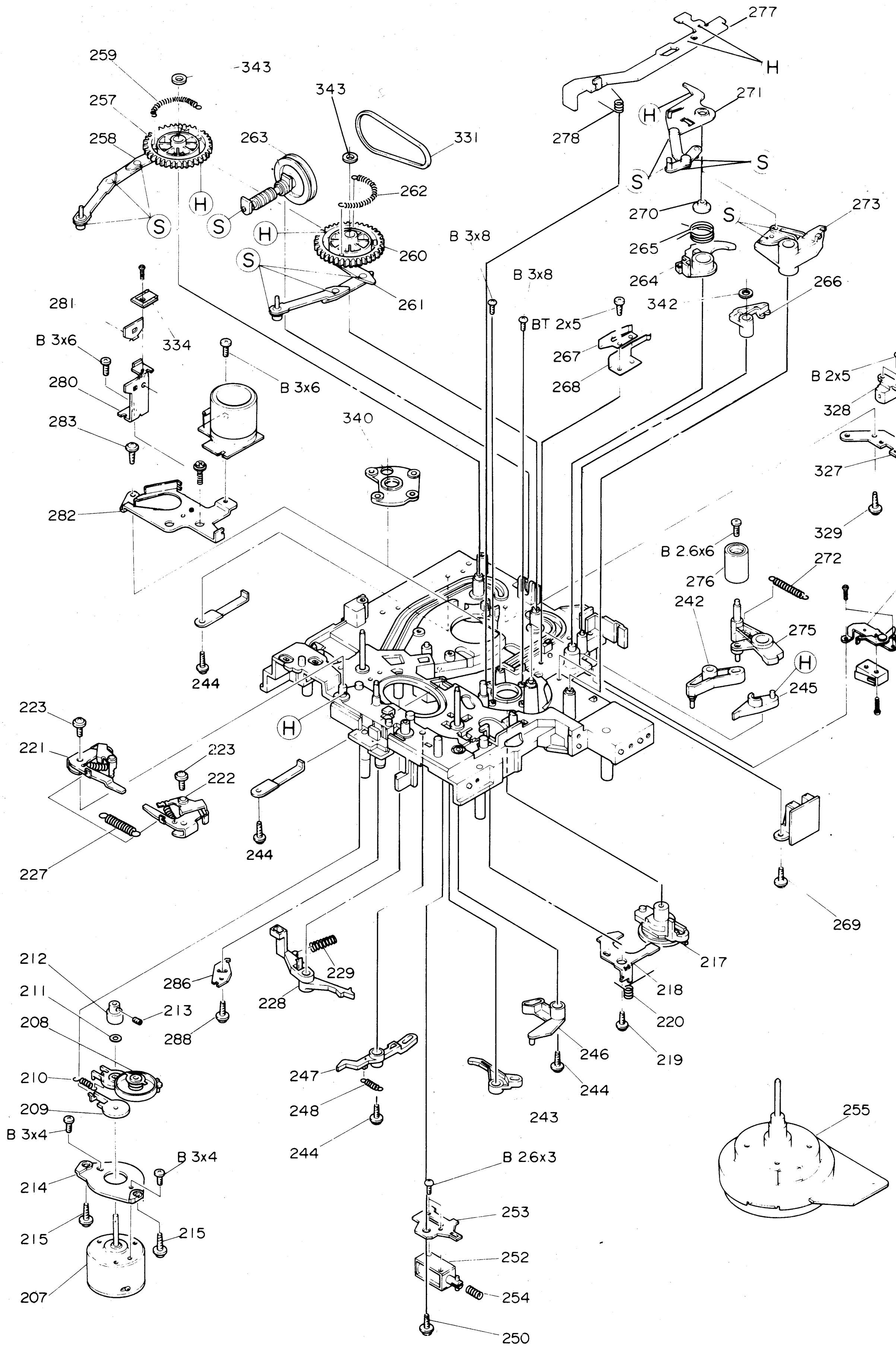

416
420
432
411
413
423
422
410
415
401
PW 3x6
241
250
PW 3x5
431
420
403
425
423
422
423
404
250
PW 3x5
409
417
427
423
423
425
414
422
251
419
424
407
B 3x5
406
B 2.6x4
412
402
241
B 3x4
423
426
421
422
428
117
121
429
PW 3x5
F 3x4
124
03x8
120
B 3x4
405
250
418
PW 3x5
250
417
408
PW 3x5
132
117
118
F 3x5(B)
122
116
B 3x12
602
F 3x5(B)
B 3x4
F 3x5
F 3x5(B)
601
143
F2.6x5
B 3x4
123
F 3x4
0 3x8

CHASSIS SECTION — DECK

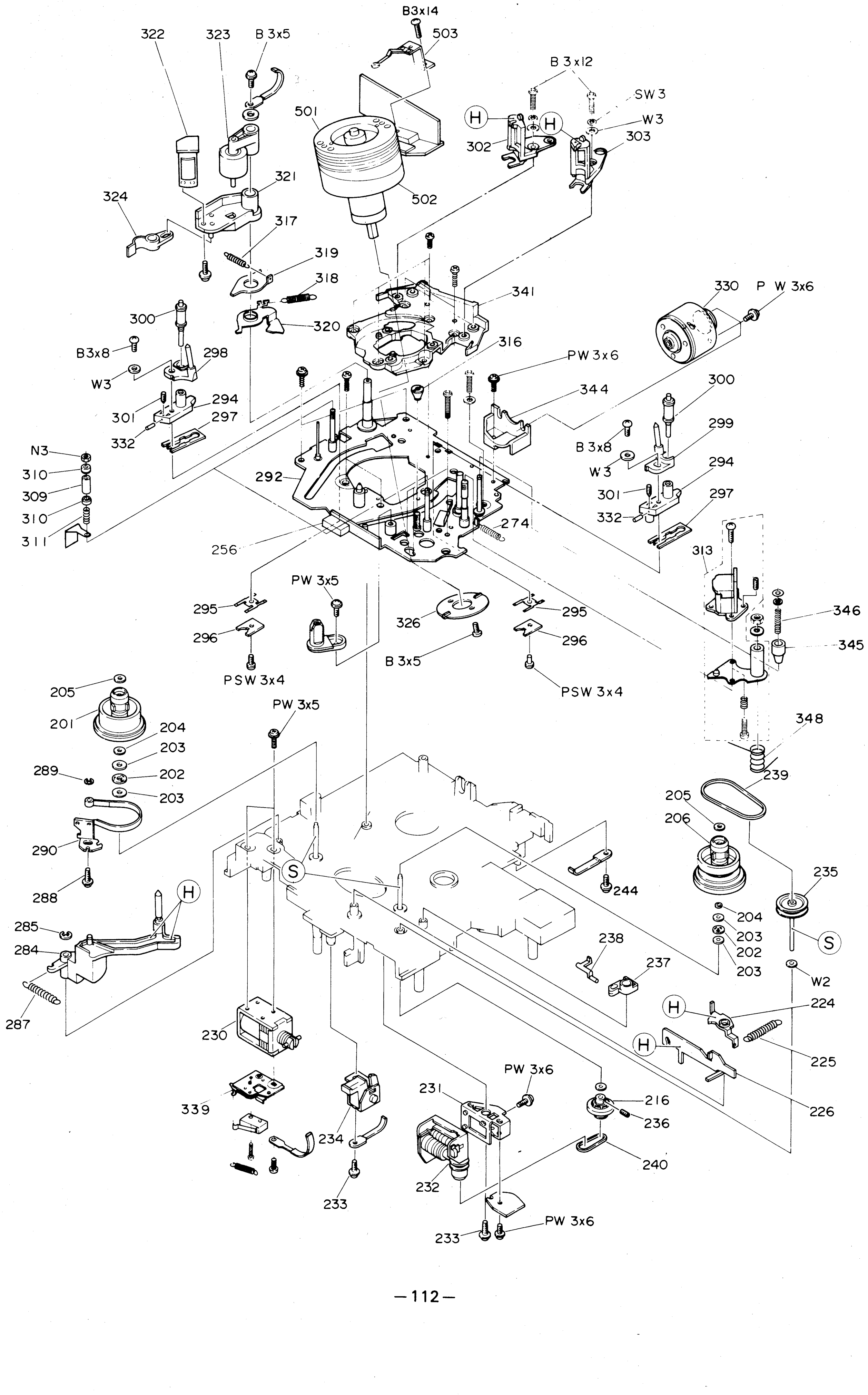


277
H
259
343
343
271
257
H
331
278
258
263
S
S
S
H
S
S
H
262
270
273
S
H
260
B 3x8
265
S
264
B 3x8
261
342
266
281
BT 2x5
267
334
B 3x6
268
B 2x5
280
B 3x6
328
340
283
327
282
329
B 2.6x6
272
276
291
242
275
H
244
245
223
H
221
223
222
244
227
269
212
217
286
229
211
213
228
218
288
208
220
246
219
210
247
244
248
209
243
B 3x4
244
255
B 3x4
B 2.6x3
214
253
215
215
252
207
254
250

CHASSIS SECTION — DECK

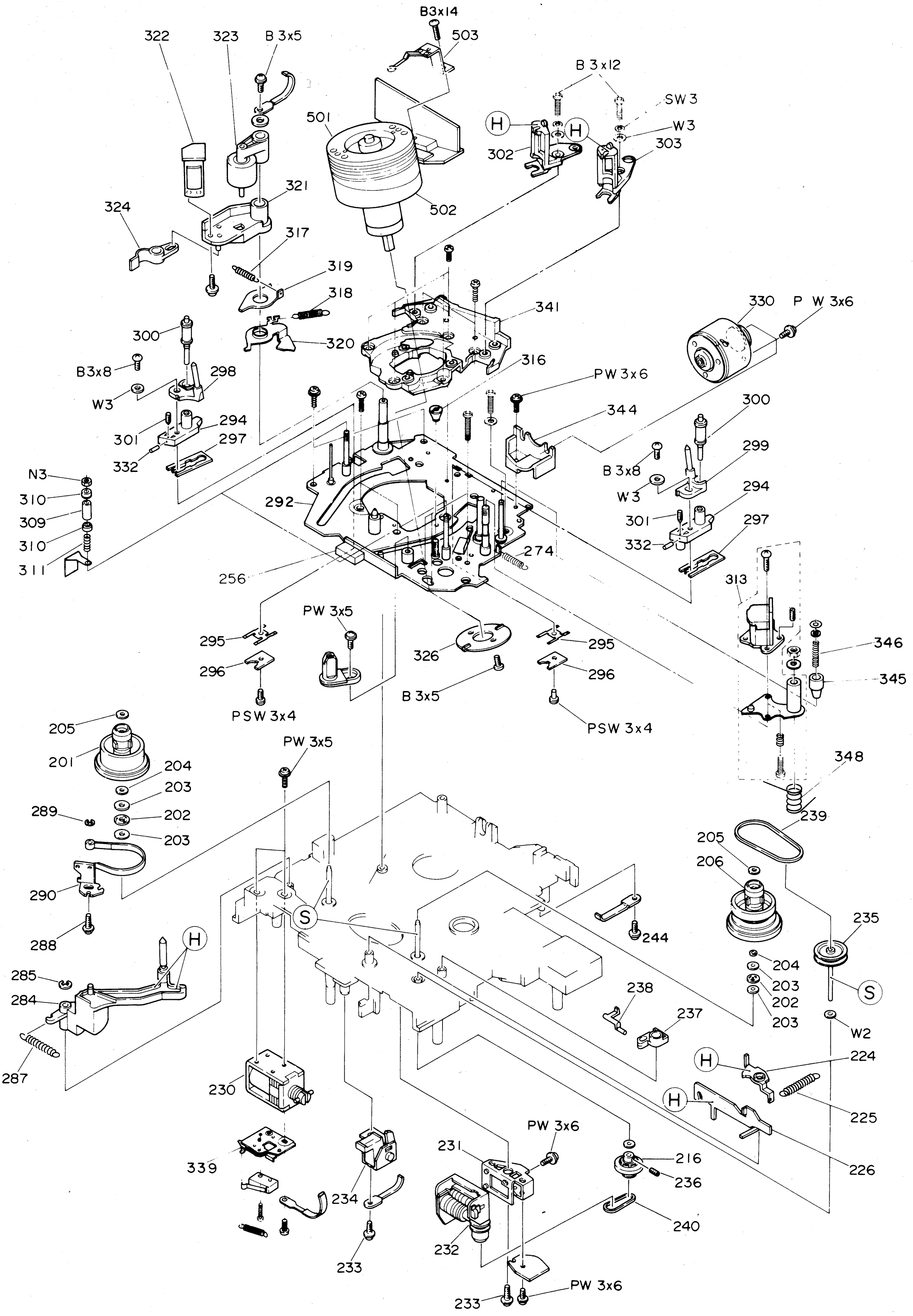

259
343
343
277
H
257
271
H
258
263
331
278
S
S
S
H
S
S
262
270
273
H
260
S
B 3x8
265
B 3x8
264
261
281
BT 2x5
342
266
B 3x6
334
267
B 3x6
268
280
B 2x5
328
340
283
327
282
329
B 2.6x6
276
272
242
291
275
H
245
244
223
H
221
223
222
244
227
269
212
286
229
217
211
213
228
218
208
288
220
246
219
210
247
244
209
248
255
B 3x4
243
244
B 3x4
B 2.6x3
214
253
215
215
252
207
254
250

TAPE GUIDE SECTION — DECK

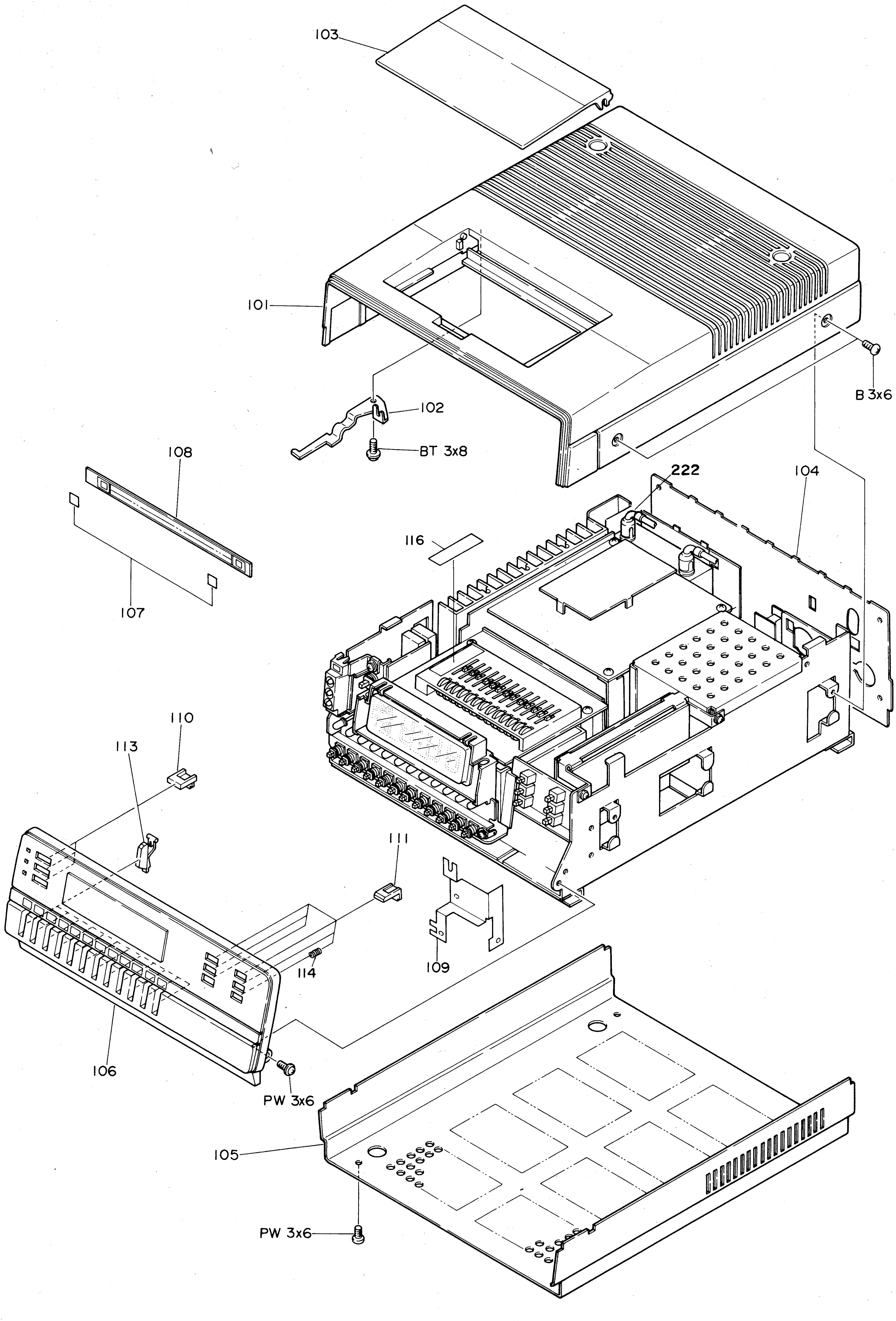


B3x14
322
323
B 3x5
503
B 3x12
SW 3
501
H
H
W 3
302
303
321
324
502
317
319
318
330
P W 3x6
341
300
320
316
B3x8
298
PW 3x6
W3
344
300
294
301
297
299
332
B 3x8
N3
W 3
294
310
309
292
301
297
310
332
274
311
256
313
PW 3x5
295
295
346
326
296
296
345
B 3x5
PSW 3x4
PSW 3x4
205
PW 3x5
201
204
348
203
289
202
239
203
205
206
290
S
288
235
H
244
204
285
203
284
202
S
238
203
237
W2
287
H
224
H
225
230
226
339
231
PW 3x6
216
234
236
240
232
233
233
PW 3x6

TAPE GUIDE SECTION — DECK


B3x14
322
323
B 3x5
503
B 3 x12
SW 3
501
H
H
W 3
302
303
321
324
502
317
319
318
330
P W 3x6
341
300
320
316
B3x8
298
PW 3x6
W3
344
300
294
301
297
332
299
B 3x8
N3
W 3
294
310
309
292
301
297
310
332
274
311
256
313
PW 3x5
295
295
346
326
296
296
345
B 3x5
PSW 3x4
PSW 3x4
205
PW 3x5
201
204
348
203
289
202
239
203
205
206
290
S
244
288
235
H
204
285
203
284
238
202
S
237
203
287
W2
H
224
230
H
225
PW 3x6
231
216
226
339
236
234
240
232
233
PW 3x6
233

CABINET SECTION — TUNER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101
102
BT 3x8
B 3x6
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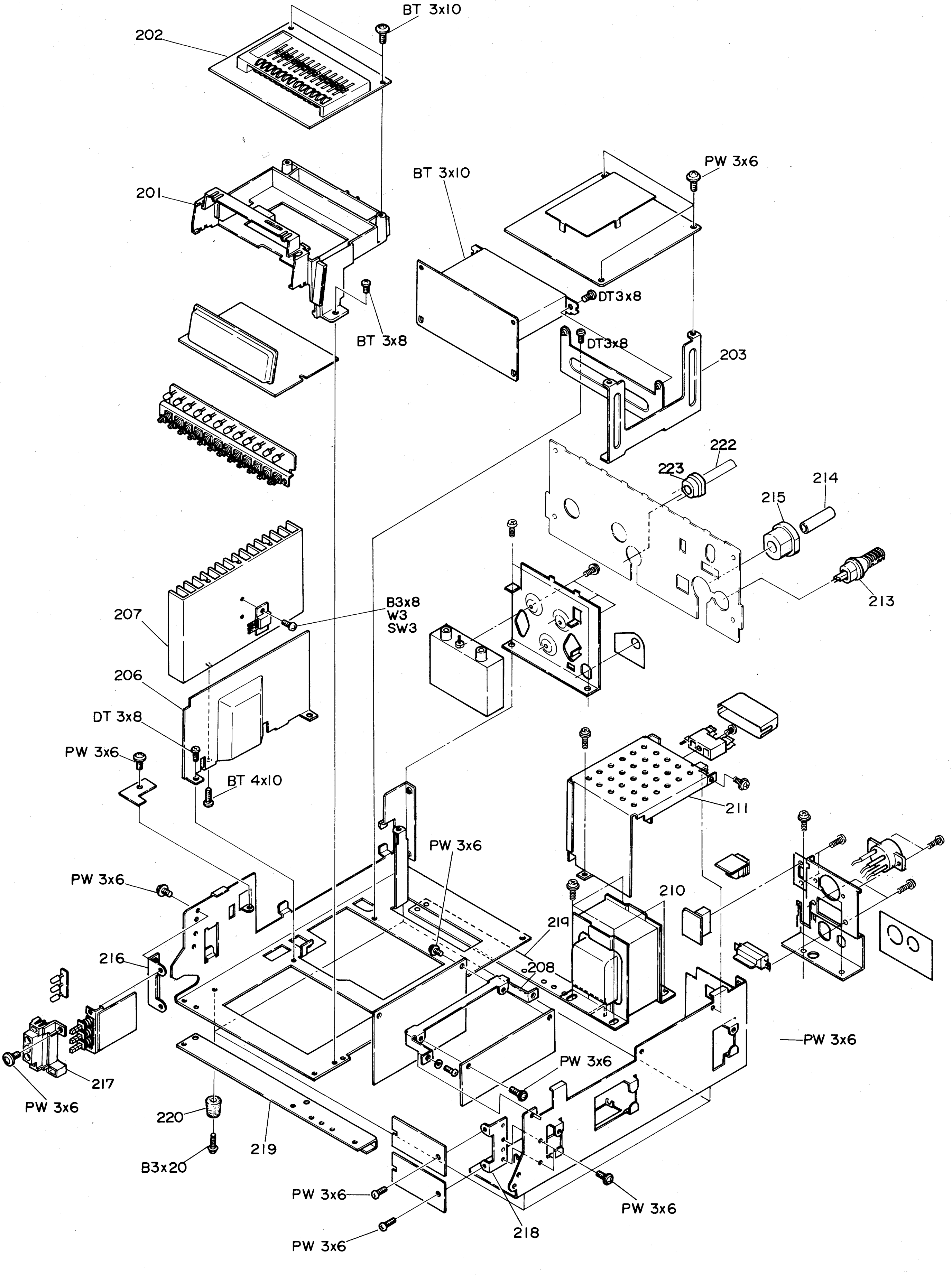
111
114
109
106
PW 3x6
105
PW 3x6

CHASSIS SECTION — TUNER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DT3x8
BT 3x8
DT3x8
203
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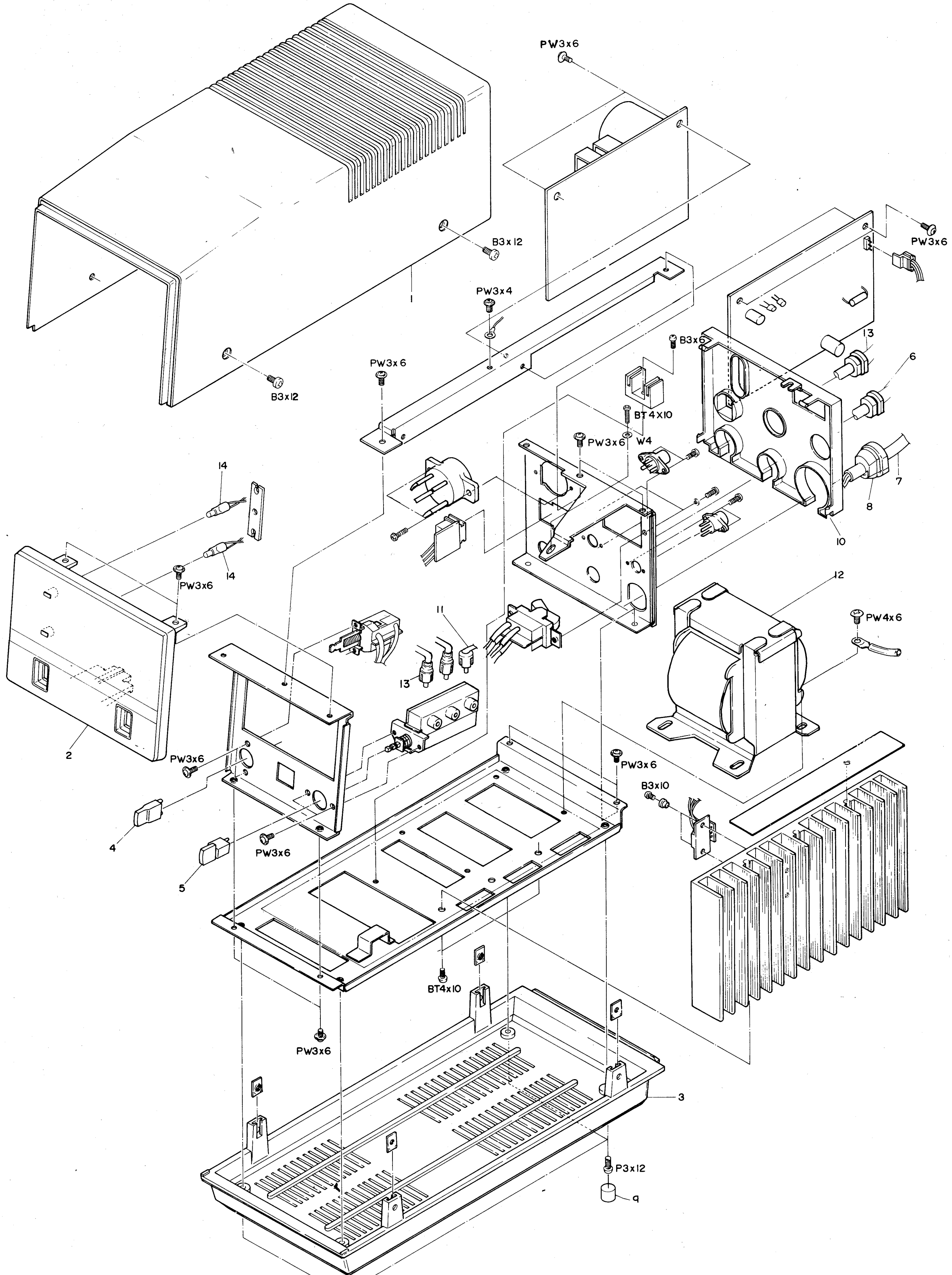
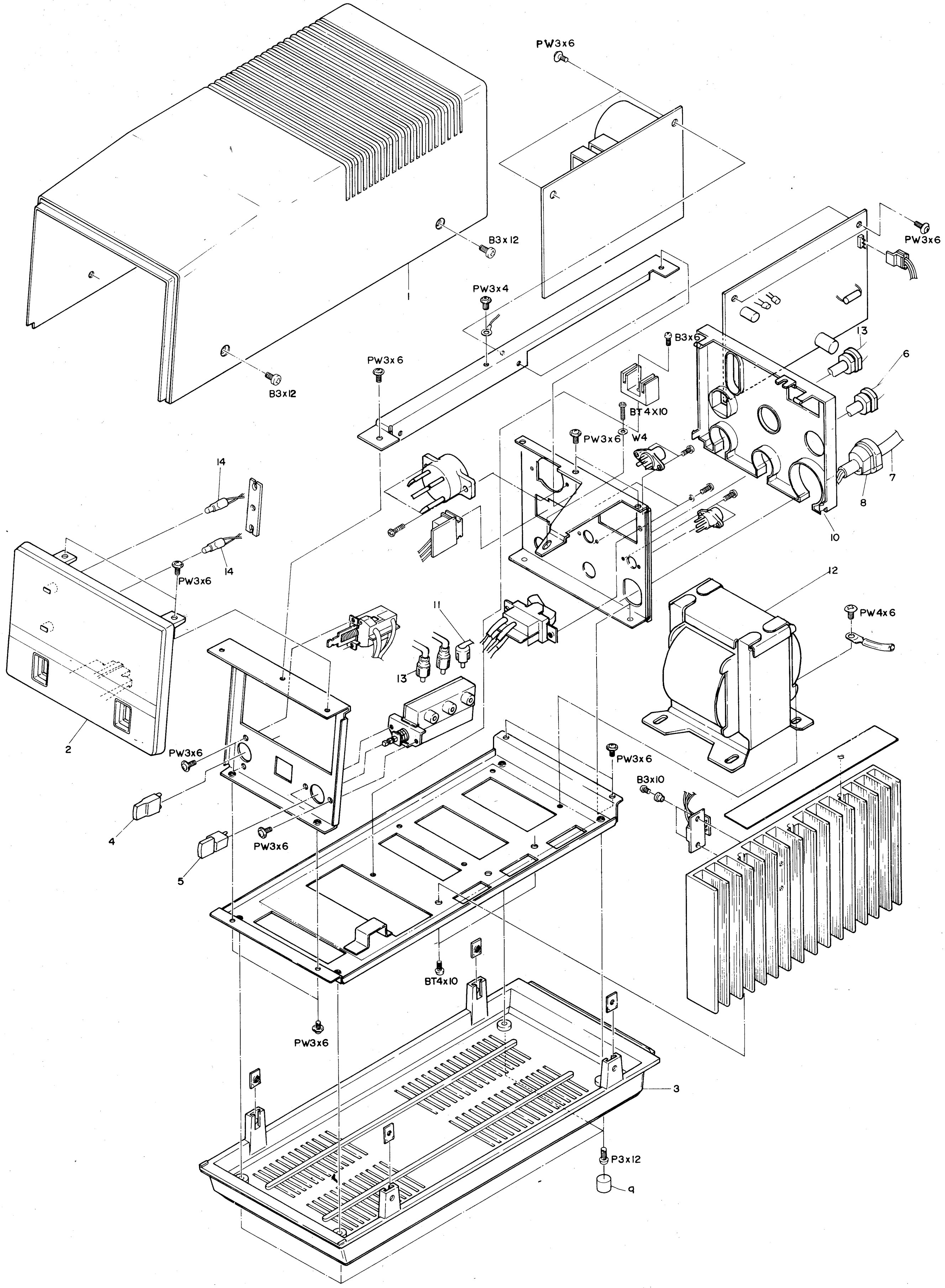
223
214
215
213
207
B3x8
W3
SW3
206
DT 3x8
PW 3x6
BT 4x10
211
PW 3x6
PW 3x6
210
219
216
208
PW 3x6
PW 3x6
217
PW 3x6
220
219
B3x20
PW 3x6
PW 3x6
218
PW 3x6

CHASSIS SECTION — ADAPTOR



PW3x6
B3x12
1
PW3x4
PW3x6
PW3x6
B3x12
B3x6
13
6
BT4x10
PW3x6
W4
7
8
10
14
14
PW3x6
12
PW4x6
11
13
2
PW3x6
PW3x6
B3x10
4
PW3x6
5
BT4x10
PW3x6
3
P3x12
9

CHASSIS SECTION — ADAPTOR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B3x12
1
PW3x6
PW3x4
B3x6
13
6
PW3x6
B3x12
BT4x10
PW3x6
W4
7
8
10
14
14
PW3x6
12
PW4x6
11
13
2
PW3x6
PW3x6
B3x10
4
PW3x6
5
BT4x10
PW3x6
3
P3x12
9

REPLACEMENT PARTS LIST — DECK

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
	5677261	FM ANTENNA JACK
	6860281	SIDE PEACE
0101	6032959	UPPER CASE ASSEMBLY
0102	6092335	CASSETTE LID
0103	7547741	SPECIAL SCREW
0104	8691425	BT BIND SCREW-3MMDX25MM
0105	6223842	FRONT PANEL ASSEMBLY
0106	6053121	BUTTON-COUNTER
0107	6053131	BUTTON-MEMORY
0108	6305504	SPRING
0109	6053231	BUTTON-POWER
0110	6052293	BUTTON-FUNCTION
0112	6283241	KNOB-TRACKING
0113	6589273	SPACER
0114	6334251	HANDLE ASSEMBLY
0115	6034762	BOTTOM CASE ASSEMBLY
0115	6034762	BOTTOM CASE ASSEMBLY
0116	9999999	SIDE BRACKET (RIGHT)
0118	5270372	SWITCHING REGULATOR
0120	9999999	SIDE BRACKET (LEFT)
0121	9999999	CENTER FRAME
0122	9999999	FRONT BRACKET
0123	6973313	HOOK PLATE (RIGHT)
0124	6973314	HOOK PLATE (LEFT)
0128	6172351	BATTERY COVER
0129	9999999	EARTH PLATE
0132	9999999	SPACER
0135	7755721	RF COVER
0136	9999999	LID SHEET
0139	6860071	CONNECTING PIECE
0140	5639342	7KEY BOARD ASSEMBLY
0141	6860352	JACK COVER
0142	7755591	JACK PLATE COVER
0143	6756381	CAMERA JACK SPACER
0145	5585581	RF CONVERTER (BS)
0145	5585582	RF CONVERTER (E)
0150	5653022	10P CONNECTOR
0152	6860292	CONVERTER HOLDER
0154	6860301	P.C.B HOLDER
0155	6860111	CONNECTING PIECE
0159	6860141	CONNECTING PIECE
0160	6860151	CONNECTING PIECE
0201	6413633	SUPPLY REEL TABLE ASSEMBLY
0202	6750441	RETAINER
0203	7787031	THRUST SUPPORT
0204	7786216	POLYSLIDER WASHER
0205	7778859	POLYSLIDER WASHER
0206	6413654	TAKE-UP REEL TABLE ASSEMBLY

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
0207	5576414	REEL MOTOR
0208	6413663	FF/REW IDLER
0209	6755521	FF/REW IDLER BASE
0210	6324436	SPRING
0211	7786178	POLE-SLIDER WASHER
0212	6383531	FF/REW PULLEY
0213	7773084	SCREW
0214	9999999	MOTOR HOLDER
0215	7781132	BT SCREW
0216	6421931	MAGNET PULLEY
0217	6413684	PLAY IDLER ASSEMBLY
0218	9999999	PLAY IDLER ARM PLATE
0219	7781133	BT SCREW-3MMD
0220	6545582	SPRING
0221	7318322	BRAKE ARM (LEFT)
0222	7318332	BRAKE ARM (RIGHT)
0223	7781133	BT SCREW-3MMD
0224	7318251	BRAKE LEVER
0225	6540571	SPRING
0226	7318072	SOLENOID SLIDER
0227	6302491	SPRING
0228	6755502	SUB BRAKE (SUPPLY)
0229	6305412	SPRING
0230	5642635	MAIN BRAKE SOLENOID
0231	9999999	COUNTER BRACKET
0232	5559341	COUNTER
0233	7781133	BT SCREW-3MMD
0234	7040342	EJECT BUTTON ASSEMBLY
0235	6421901	PULLEY (COUNTER)
0236	7773084	SCREW
0237	6756531	TAKE-UP SOLENOID ARM
0238	6756522	REEL ROCK ARM
0239	6354401	BELT
0240	6354664	BELT-COUNTER
0241	6574531	PHOTO TR HOOD
0242	6860241	CONNECT ARM
0243	6755471	NEUTRAL ARM
0244	7781133	BT SCREW-3MMD
0245	6755542	PLAY ARM
0246	6756241	EJECT INHIBITING ARM (1)
0247	6756251	EJECT INHIBITING ARM (2)
0248	6540611	SPRING
0250	8660405	PW SCREW-3MMDX5MM
0251	6860162	RECORDING PREVENTION ARM
0252	5642643	DC SOLENOID
0253	9999999	SOLENOID PLATE
0254	6305442	SPRING
0255	5575166	DD CAPSTAN MOTOR

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
0256	9999999	CUSHION
0257	6430421	LOADING GEAR (LEFT)
0258	7318352	3 SERIES LINK
0259	6302344	SPRING
0260	6430422	LOADING GEAR (RIGHT)
0261	7318352	3 SERIES LINK
0262	6302344	SPRING
0263	6413671	LOADING WORM
0264	6755622	SWITCH ARM (LOADING)
0265	6545571	SPRING
0266	6755613	SWITCH ARM (UNLOADING)
0267	6540542	SWITCH ARM STOPPER (LOADING)
0268	6540552	SWITCH ARM STOPPER (UNLOADING)
0269	7781133	BT SCREW-3MMD
0270	6343473	ROLLER
0271	7318376	PRESSURE ROLLER LINK
0272	6301655	SPRING
0273	6755671	SPRING
0274	6540561	SPRING
0275	6860211	PRESSURE ROLLER ARM
0276	6383211	PRESSURE ROLLER ASSEMBLY
0277	7318461	LOADING SLIDER
0278	6545592	SPRING
0281	9999999	COVER
0282	9999999	BRACKET
0283	7781133	BT SCREW-3MMD
0284	6755683	TENSION ARM
0285	7230902	E RING
0286	7317951	SPRING HOOK
0287	6301394	SPRING FOR DAMPER ARM
0288	8691408	BIND TAPPING SCREW-3MMDX8MM (BLACK)
0289	7230901	E RING
0290	7318381	TENSION BAND
0291	7324691	SWITCH BRACKET
0292	9999999	SUB CHASSIS
0294	6755515	GUIDE ROLLER BASE
0295	6532911	SPRING
0296	9999999	LIMIT PLATE
0297	6533231	SLIDE SPACER
0298	6973461	TILT POLE (SUPPLY)
0299	6973471	TILT POLE (TAKE-UP)
0300	6344252	GUIDE ROLLER SHAFT
0301	7773087	SET SCREW
0302	6977021	CATCHER (TAKE-UP)
0303	6977011	CATCHER (SUPPLY)
0309	7575242	TAPE GUIDE
0310	7543831	GUIDE FRANGI
0311	6304903	SPRING
0313	5448391	AUDIO CONTROL HEAD
0315	6304901	SPRING

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
0316	7549271	X-ADJUST SCREW
0317	6323673	SPRING
0318	6322211	PRESSURE ROLLER ARM SPRING
0319	7320402	IMPEDANCE OPERATING ARM (2)
0320	7370422	IMPEDANCE OPERATING ARM(1)
0321	6860171	HEAD ARM
0322	5448151	FULL ERASG HEAD
0323	6383526	IMPEDANCE ARM
0324	6860272	TENSION ARM OPERATION
0326	7060951	MG PLATE
0327	9999999	TACK HEAD BRACKET
0328	5445193	HEAD
0329	7781133	BT SCREW-3MMD
0330	5576352	LOADING MOTOR
0331	6354921	BELT-LOADING
0332	7544352	LOCK SHAFT
0334	0170307	DEW SENSOR
0339	7370254	BRACKET
0340	6860251	SPACER
0341	6977031	CYLINDER BASE
0342	7787601	WASHER
0343	7787602	WASHER
0344	9999999	MOTOR HOLDER
0345	9999999	HEAD STOPPER
0346	6305901	SPRING
0347	8741104	BIND SCREW-2MMDX4MM
0348	6546161	SPRING
0349	6541301	SPRING
0349	7370371	ACE HEAD BASE
0401	7041942	CASSETTE HOLDER ASSEMBLY
0402	6347261	GOVERNER
0403	7318263	HOLDER LINK
0404	7546961	SHAFT
0405	7318684	HOLDER BRACKET (RIGHT)
0406	6381954	DUMPER WHEEL
0407	6430391	RACK GEAR
0408	7318403	SYNCHRO ARM
0409	7318402	SYNCHRO ARM
0410	7318485	CASSETTE UP ASSEMBLY
0411	7546981	SHAFT
0412	7546971	SHAFT
0413	7318293	HOLDER LINK (LEFT)
0414	7318673	HOLDER BRACKET (LEFT)
0415	6755742	PRESSURE ARM (RIGHT)
0416	6755752	PRESSURE ARM (LEFT)
0417	7575253	SPACER
0418	6300147	SPRING
0419	6540671	SPRING
0420	6540662	SPRING
0421	6300111	SPRING

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
0422	7230902	E RING
0423	7230901	E RING
0424	7778859	POLYSLIDER WASHER
0425	7787411	WASHER
0426	7318304	LOCK ARM (RIGHT)
0427	7318303	LOCK ARM (LEFT)
0428	7318342	SYNCHRO PLATE
0429	6755531	SPACER RING
0431	6540673	SPRING
0432	6541011	SPRING
0501	5458165	UPPER CYLINDER
0502	5458252	LOWER CYLINDER ASSEMBLY
0503	5687401	BRUSH
0601	6759301	NUT
0602	7779867	WASHER

SYMBOL-NO	P-NO	DESCRIPTION
		FOR ACCESSARIES
212	4603571	OPERATING GUIDE (BS)
213	4603572	OPERATING GUIDE (E)
214	5639321	REMOTE CONTROL BOX
215	5731013	EARPHONE
216	5895992	AERIAL CABLE (BS)
217	5896701	AERIAL CABLE (E)
		FOR PACKING MATERIAL
218	7861691	CUSHION
219	7861701	CUSHION
220	7906241	CARTON BOX (BS)
221	7906243	CARTON BOX (E)

REPLACEMENT PARTS LIST — TUNER

SYMBOL-NO	P-NO	DESCRIPTION
FOR FINAL ASSEMBLY		
0101	6034282	UPPER CASE ASSEMBLY
0102	6533441	SPRING
0103	6172235	CHANNEL COVER
0104	6042921	REAR PANEL ASSEMBLY (BS)
0104	6042922	REAR PANEL ASSEMBLY (E)
0105	6042931	BOTTOM COVER ASSEMBLY
0105	6042932	BOTTOM COVER ASSEMBLY (E)
0106	6223685	FRONT PANEL ASSEMBLY (BS)
0106	6223686	FRONT PANEL ASSEMBLY (E)
0107	6464834	CHANNEL CARD (E)
0107	6464835	CHANNEL CARD (BS)
0108	6756615	CARD HOLDER
0109	7322512	CONNECTION PLATE
0110	6052402	BUTTON-POWER
0111	6052412	BUTTON-TIMER
0113	6052443	BUTTON-CHANNEL
0114	6305561	SPRING
0201	9999999	TIMER HOLDER
0202	5008681	PRE-SET VOLUME (E)
0202	5008682	PRE-SET VOLUME (BS)
0203	9999999	TUNER HOLDER
0203	9999999	TUNER HOLDER
0206	9999999	SHIELD PLATE
0210	5212841	POWER TRANS
0211	9999999	SHIELD CASE

SYMBOL-NO	P-NO	DESCRIPTION
FOR ACCESSARIES		
0212	5602021	SEESAW SWITCH
0213	5746094	POWER CORD (BS)
0213	5746157	POWER CORD (E)
0214	5898381	10P DIN CORD
0215	6794261	NYLON BUSHING-10PIN CORD
0216	9999999	P.C.B HOLDER
0217	6860311	LED HOLDER
0218	9999999	P.C.B HOLDER
0219	9999999	CHASSIS FRAME
0220	6573411	RUBBER LEG
0221	6794091	RUBBER BUSH
0222	9999999	CABLE WITH PLUG
0223	6794276	BUSHING

REPLACEMENT PARTS LIST — ADAPTOR

SYMBOL-NO	P-NO	DESCRIPTION
FOR FINAL ASSEMBLY		
0001	6033854	TOP CASE
0002	6223464	FRONT PANEL ASSEMBLY (BS)
0002	6223465	FRONT PANEL ASSEMBLY (E)
0003	6034173	BOTTOM CASE ASSEMBLY (BS)
0003	6034174	BOTTOM CASE ASSEMBLY (E)
0005	6052701	BUTTON-SELECT

SYMBOL-NO	P-NO	DESCRIPTION
FOR FINAL ASSEMBLY		
0006	5746094	POWER CORD (BS)
0006	5746157	POWER CORD (E)
0007	5897663	10P DIN CORD
0009	6573421	RUBBER LEG
0012	6224011	REAR PANEL ASSEMBLY (BS)
0012	6224012	REAR PANEL ASSEMBLY (E)

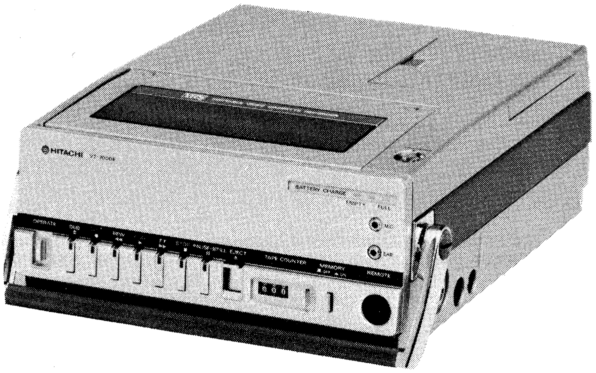
HITACHI
SERVICE MANUAL

TK **No. 1371**

VT-7000E,E(BS)
VT-TU70E,E(BS)
A-V70E,E(BS)

REVISED

Technical Data



VT-7000E

VT-TU70E

A-V70E

VHS
THIS VIDEO DECK IS A VHS TYPE VIDEO RECORDER.
FOR PROPER OPERATION, ONLY THE VHS TYPE CASSETTE MUST BE USED.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

PORTABLE VIDEO CASSETTE RECORDER/VIDEO TUNER/AC ADAPTOR

October 1981 **TOKAI WORKS**

TABLE OF CONTENTS

SPECIFICATIONS 1

KEY TO ILLUSTRATIONS 2

DISMANTLING

Deck 3

Adaptor 11

Tuner 12

ADJUSTMENT

Servicing Jigs and Tools 13

ELECTRIC CIRCUT ADJUSTMENT

Adjustment of Servo Circuit

1. Confirmation of sync separator input signal 14
2. Confirmation of reference oscillator frequency 15
3. Confirmation of capstan sample pulse 15
4. Adjustment of cylinder FG balance 15
5. Adjustment of frame advance speed 15
6. Adjustment of capstan speed 15
7. Confirmation of playback capstan trapezoidal wave 15
8. Confirmation of control pulse 15
9. Adjustment of cylinder speed 16
10. Confirmation of playback cylinder servo 16
11. Confirmation of head switching pulse 16
12. Adjustment of head switching point 16
13. Adjustment of record timing 16
14. Adjustment of tracking preset 17
15. Adjustment of noise phase 17
16. Adjustment of VD phase 17

Adjustment of Indicator Circuit

Overdischarge level adjustment 17

Adjustment of Video Signal Circuit

1. Adjustment of carrier set and deviation 18
2. Adjustment of white clip and dark clip 18
3. Adjustment of EE level 19
4. Adjustment of record chroma level 19
5. Adjustment of record current balance 20
6. Adjustment of record luminance level 20
7. Adjustment of peaking and dampling 20
8. Adjustment of playback level 20

Adjustment of Chroma Circuit

1. Adjustment of AFC F_0 21
2. Adjustment of APC F_0 21
3. Adjustment of local F_0 21
4. Confirmation of manual B/W changeover 21
5. Confirmation of SECAM system 21

Adjustment of Audio Circuit

1. Adjustment of bias level 22
2. Adjustment of playback level 22
3. Adjustment of noise canceller 22

Adjustment Table of P.C. Boards 23

Adjustment of Tuner/IF Circuit

1. Adjustment of carrier filter and video amplitude 27
2. Adjustment of audio trap 27
3. Adjustment of AFS 28
4. Adjustment of SIF 28
5. Adjustment of PIF 28
6. Adjustment of AGC 29

MECHANICAL ADJUSTMENT

1. Reel table height 30
2. Latch solenoid position 30
3. Tension pole position 30
4. Checking the back-tension 30
5. Checking the supply sub. brake position 31
6. Main brake torque 31
7. Slack removal torque 31
8. Rewind torque 31
9. Take-up torque 31
10. Fast forward torque 31
11. Supply reel table back-tension 31
12. Take-up reel table brake-tension 31
13. Take-up reel table back-tension in loading, unloading, Rec/Pause modes 31
14. Reel lock arm adjustment 31
15. Adjusting the position of the take-up reel table stop detector hall IC 32
16. Adjusting the DD cylinder tach head 32
17. Adjusting the counter pulley 32
18. Adjusting the loading/unloading switch 32
19. Adjusting the guide roller (Guide pin) 32
20. Adjusting the audio/control head 33
21. Tape travel 34

DIAGRAMS

Overall Block Diagram

Deck 38

Tuner (For the UK model) 41

Tuner (Except for the UK model) 43

Camera Connector

Schematic diagram 45

Circuit board diagram 47

Y Demodulator/Chroma

- Schematic diagram 48
- Circuit board diagram
  - Y Demodulator P.C.B 51
  - Chroma P.C.B 52
- Waveforms 59

Y Modulator/Audio

- Schematic diagram 54
- Circuit board diagram 57
- Waveforms 59

System Control

- Schematic diagram 61
- Circuit board diagram 71
  - Switch P.C.B 68
  - Switching regulator
    - Schematic diagram 76
    - Circuit board diagram 76
- Waveforms 59

Servo

- Schematic diagram 65
- Circuit board diagram 71
  - Cylinder motor
    - Schematic diagram 74
    - Circuit board diagram 74
  - Capstan motor
    - Schematic diagram 75
    - Circuit board diagram 75
  - Take-up end sensor P.C.B 69
  - Supply end sensor P.C.B 69
  - Internal battery jack P.C.B 70
  - Capacitor P.C.B 70
  - Tape sensor lamp P.C.B 70
  - Loading SW P.C.B 70
  - Rotation sensor P.C.B 70
- Waveforms 60

RF Converter

- Schematic diagram 77

RF Booster

- Schematic diagram 77

Tuner/IF **(For UK) (Except for UK)**

- Schematic diagram 79 84
- Tuner internal circuit 78 78
- Circuit board diagram 82 87

Program Selector/Preset

- Schematic diagram 79 84
- Circuit board diagram 81 86

Timer

- Schematic diagram 89 89
- Circuit board diagram 93 94

Rectifier/Regulator

- Schematic diagram 89 89
- Circuit board diagram 91 91

Replacement Parts List

- Deck 98
- Tuner 101
- Adaptor 102

EXPLODED VIEW

Deck

- Cabinet section (I) 104
- Cabinet section (II) 105
- Chassis assembly/Cassette housing assembly 106
- Chassis section 107
- Tape guide section 108

Tuner

- Cabinet section 109
- Chassis section 110
- **Adaptor** 111

Replacement Parts List

- Deck 112
- Tuner 115
- Adaptor 115

SPECIFICATIONS

DECK

Format:	VHS PAL Standard
Recording:	Rotary Two Head Helical Scan Azimuth Recording
Tape Speed:	23.39 mm/sec.
Tape Width:	12.7 mm
Operation Temperature:	0°C to 40°C
Video:	PAL colour (system I) and CCIR monochrome signals 625 lines. (For the United Kingdom) PAL colour (system B and G) and CCIR monochrome signals 625 lines. (Except for the United Kingdom)
Recording Time:	180 min. (with Hitachi E-180 cassette)
RF Output:	UHF channels 37 (30 — 39 adjustable)
Video Input:	1 Vp-p 75Ω Unbalanced.
Video Output:	1 Vp-p 75Ω Unbalanced.
S/N Ratio (Video):	43 dB
S/N Ratio (Audio):	43 dB
Horizontal Resolution:	Colour 240 lines Monochrome 290 lines
Mic Input:	−69 dB 10 kΩ
Audio Input:	−20 dB 20 kΩ
Audio Output:	−6 dB 500Ω
Audio Frequency Range:	70 Hz to 12 kHz
Power:	DC 12V
Power Consumption:	8W
Cabinet Size:	120 mm (H) × 269 mm (W) × 318 mm (D)
Weight:	5.9 kg

TUNER

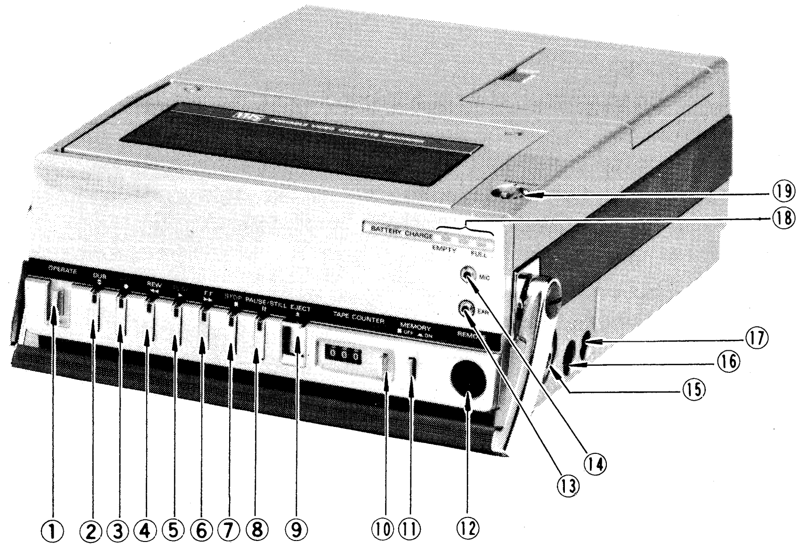
Video Signal:	PAL colour (System I) and CCIR monochrome (For the United Kingdom) PAL colour (System B and G) and CCIR monochrome (Except for the United Kongdom)
Aerial Input (Antenna):	UHF 75Ω
Channel Received:	UHF channels 21 — 69 VHF channels 2 — 12 (Except for the United Kingdom)
RF Output:	UHF 75Ω
Power Supply:	AC 100 — 110V/115 — 127V/200 — 220V/230 — 250V 50 Hz (For the United Kingdom) 50/60 Hz (Except for the United Kingdom)
Power Consumption:	65W
Dimensions:	120 (H) × 258 (W) × 325 (D) mm
Weight:	6.3 kg

ADAPTOR

Aerial Input (Antenna):	UHF 75Ω
RF Output:	UHF 75Ω
Power Supply:	AC 100 — 110V/115 — 127V/200 — 220V/230 — 250V
Power Consumption:	65W
Dimensions:	120 (H) × 120 (W) × 290 (D) mm
Weight:	3.5 kg

KEY TO ILLUSTRATIONS

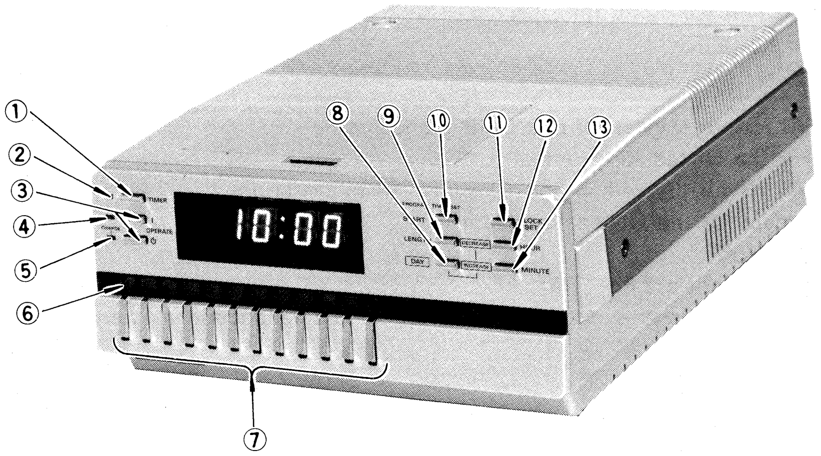
DECK



OPERATE
DUB
REW
FF
STOP
PAUSE/STILL
EJECT
TAPE COUNTER
MEMORY
OFF ON
BATTERY CHARGE
EMPTY FULL
MIC
EAR
REMOTE
①
②③④⑤⑥⑦⑧
⑨
⑩⑪
⑫
⑬
⑭
⑮
⑯
⑰
⑱
⑲

1. Operate switch
2. Audio dub button
3. Record button
4. Rewind button
5. Play button
6. Fast forward button
7. Stop button
8. Pause/Still button
9. Eject button
10. Tape counter button
11. Memory switch button
12. Remote jack
13. Earphone jack
14. Microphone jack
15. Camera connector
16. Ext. Batt. jack
17. Camera pause jack
18. Battery indicator
19. Tracking control

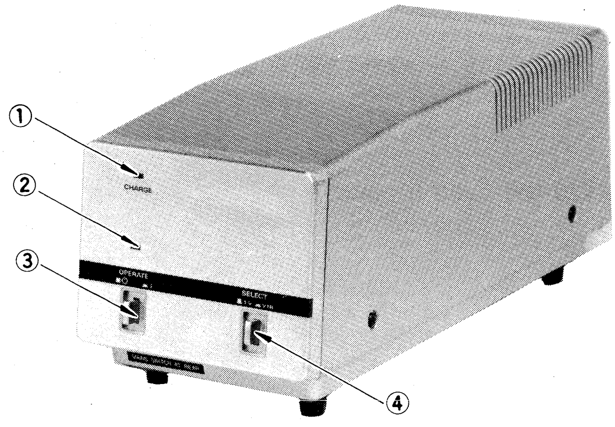
TUNER



TIMER
OPERATE
CHARGE
10:00
START
LENGTH
DAY
DECREASE
INCREASE
CLOCK SET
HOUR
MINUTE
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬

1. Timer switch
2. Timer indicator
3. Operate ON/OFF switch
4. Operate indicator
5. Charge indicator
6. Channel indicator
7. Channel select button
8. Day button
9. Length button
10. Start button
11. Clock set button
12. Hour button
13. Minute button

ADAPTOR

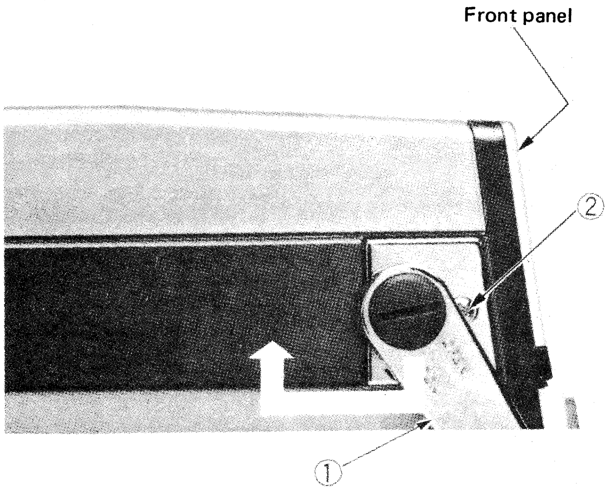


CHARGE
OPERATE
SELECT
①
②
③
④

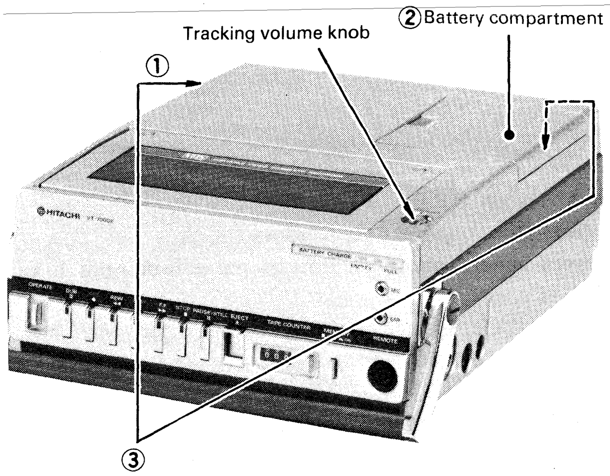
1. Charge indicator
2. Power indicator
3. Operate switch
4. VTR/TV select switch

DISMANTLING — DECK

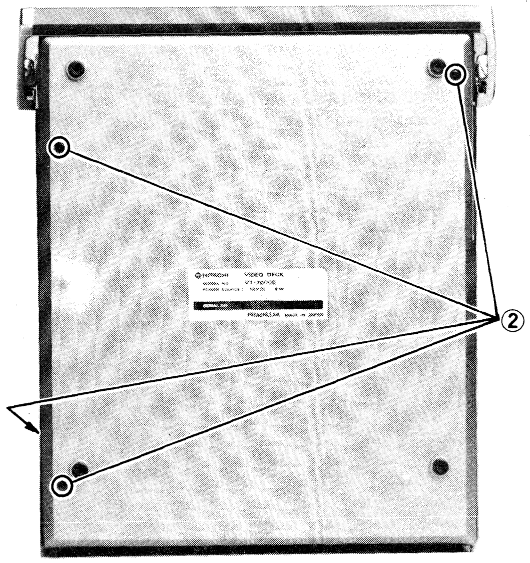
te: Before beginning disassembly it is important to realize that all screws and bolts are METRIC. Disassembly should be done using METRIC tools .
Remove three panels in the order front, top then bottom. If you don't follow this order, the top and bottom panels cannot be removed.



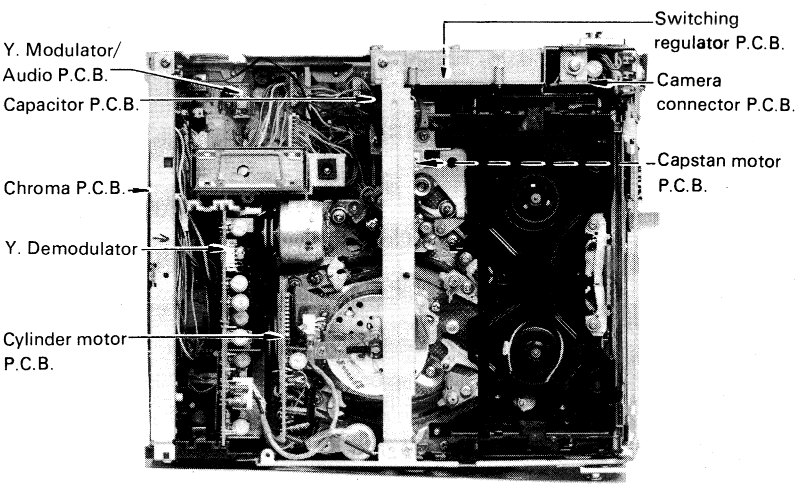
1. Front panel
   1) Before removing the front panel it is necessary to remove the handle.
   2) Remove 2 screws.

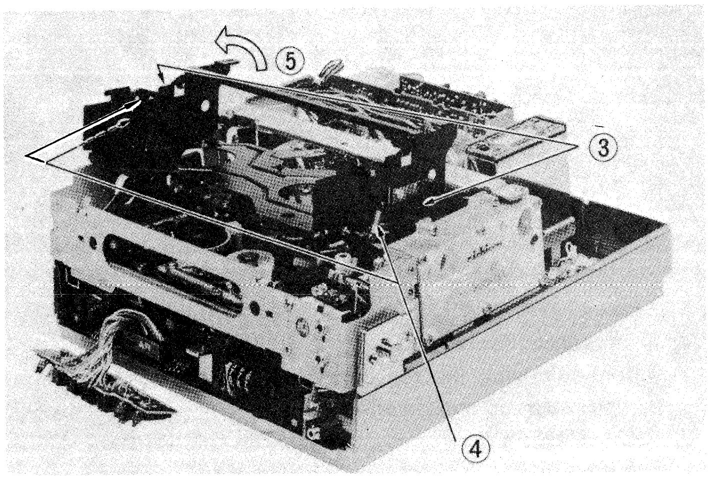


2. TOP panel
   1) Front panel (See item 1)
   2) Before removing the top panel, remove the battery compartment lid and tracking knob.
   3) Remove two screws, one positioned at the left back and the other at the battery compartment.

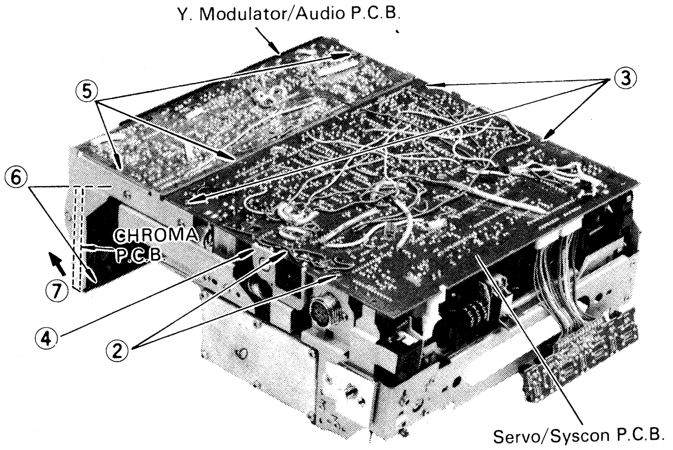


3. Bottom panel
   1) Front panel, Top panel (See item 1, 2)
   2) Remove 4 screws holding the bottom panel.


Y. Modulator/
Audio P.C.B.
Capacitor P.C.B.
Chroma P.C.B.
Y. Demodulator
Cylinder motor
P.C.B.
Switching
regulator P.C.B.
Camera
connector P.C.B.
Capstan motor
P.C.B.

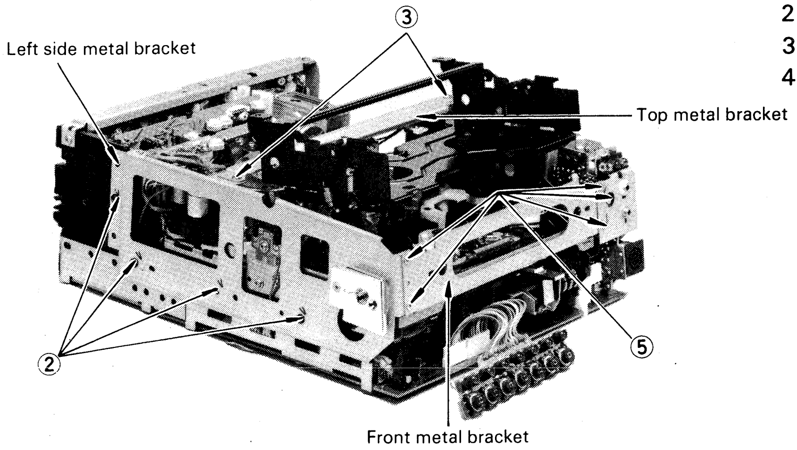


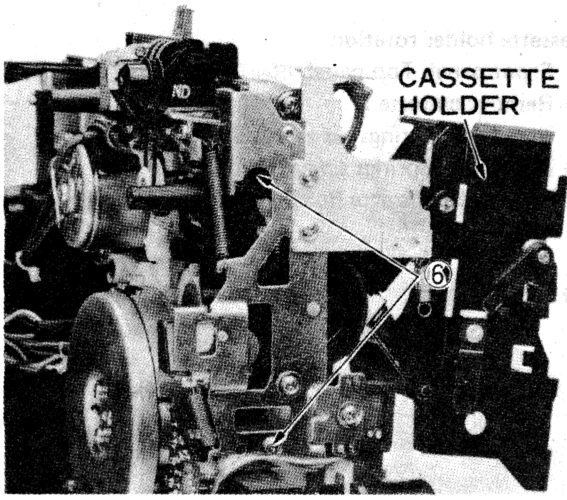
4. Cassette holder rotation
   1) Front panel, Top panel (See item 1, 2)
   2) Remove cassette lid.
   3) Remove 2 E rings on each side.
   4) Remove 3 Springs on each side.
   5) Rotate the cassette holder toward near to you.

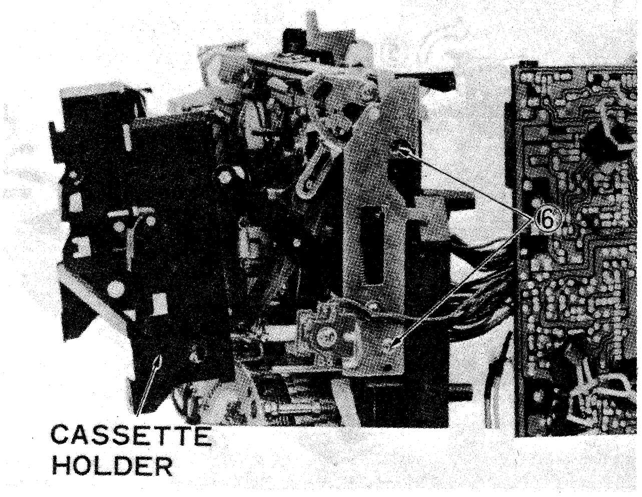

Y. Modulator/Audio P.C.B.
⑤
③
⑥
CHROMA
P.C.B.
⑦
④
②
Servo/Syscon P.C.B.

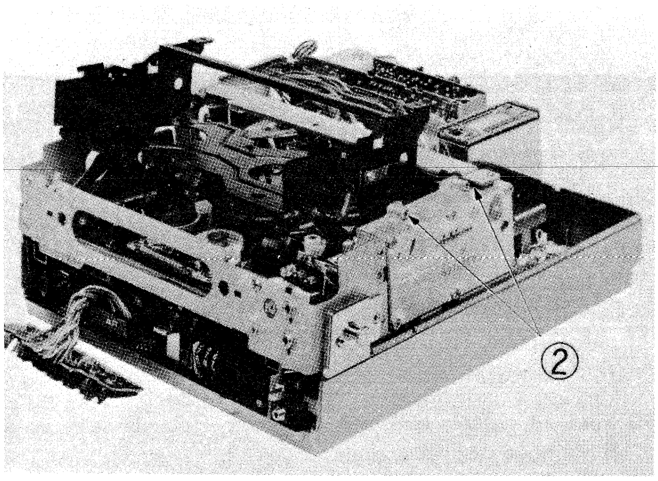
5. Servo/Syscon P.C.B.
   Y-Modulator/Audio P.C.B, Chroma P.C.B.
   1) Front panel, Top panel, Bottom panel (See item 1, 2, 3).
   2) Remove 2 screws holding bracket for Mic and Earphone jacks.
   3) Remove 3 screws.
   4) Disconnect switching regulator connector
   5) Remove 3 screws.
   6) Remove 2 screws.
   7) Rotate chroma P.C.B. toward near to you.

6. Cassette holder assembly removal
   1) Servo/Syscon P.C.B. (See item 5).
   2) Remove 4 screws.
   3) Remove 2 screws.
   4) Remove 5 screws.

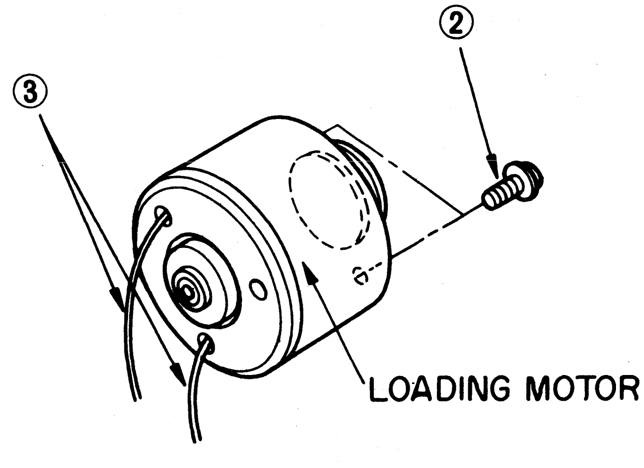

③
Left side metal bracket
Top metal bracket
②
⑤
Front metal bracket


CASSETTE HOLDER
⑥


⑥
CASSETTE HOLDER

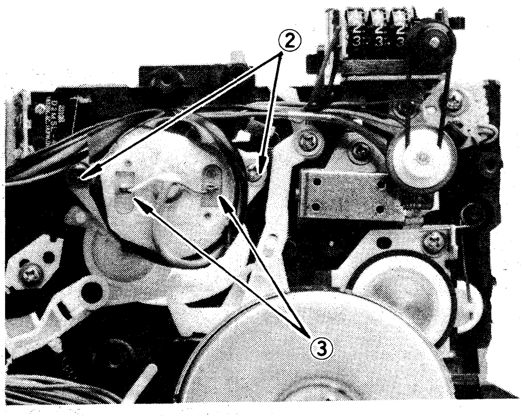


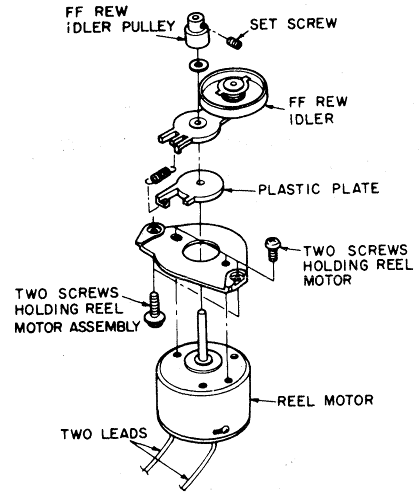
7. Switching regulator
   1) Front panel, Top panel (See item 1, 2)
   2) Remove 2 screws.


②
③
LOADING MOTOR

8. Loading motor
   1) Main P.C.B. (See item 5)
   2) Remove 2 screws.
   3) Remove 2 leads.

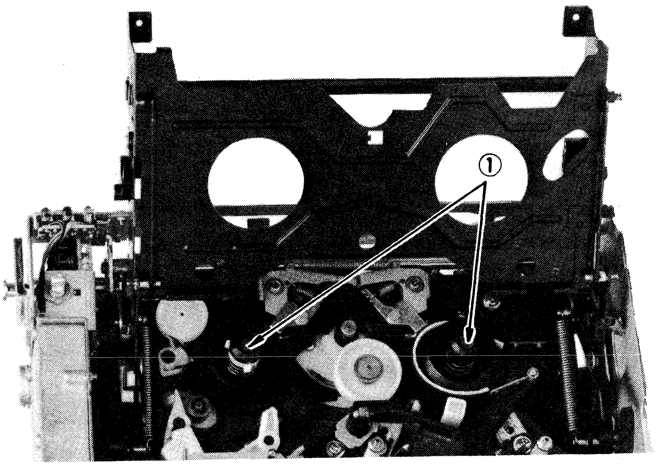
9. Reel motor
   1) Main P.C.B. (See item 5)
   2) Remove 2 screws.
   3) Remove 2 leads.

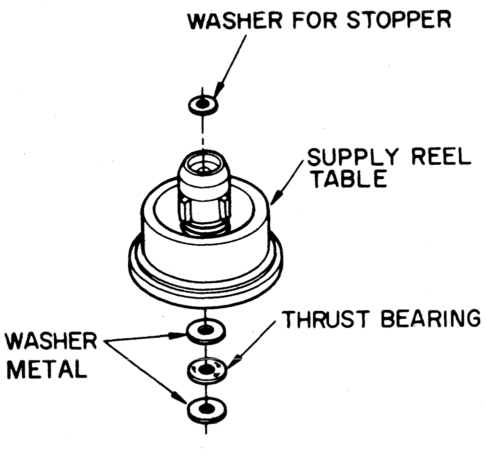


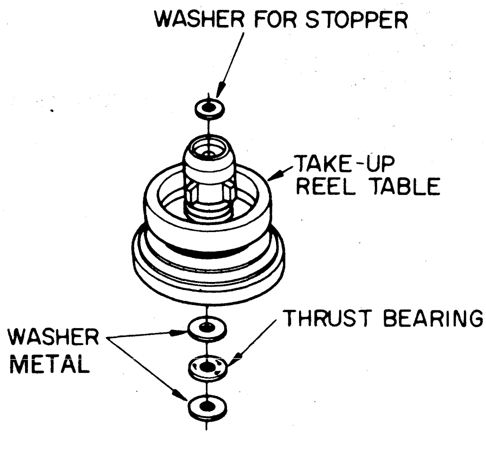

FF REW IDLER PULLEY
SET SCREW
FF REW IDLER
PLASTIC PLATE
TWO SCREWS HOLDING REEL MOTOR
TWO SCREWS HOLDING REEL MOTOR ASSEMBLY
REEL MOTOR
TWO LEADS

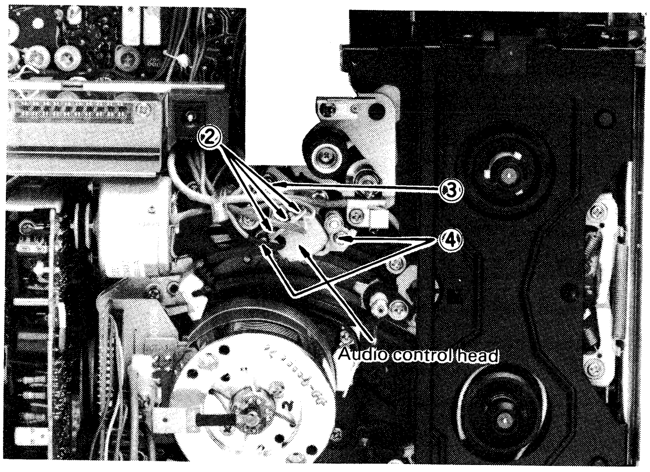
10. Take-up, Supply reel disk
   1) Remove stopper washer.

[Note] 1. Pay particular attention to the washer and thrust bearing located under the reel disk as they determine the proper disk height.
2. Before removing the supply reel disk, it will be necessary to remove the tension band.



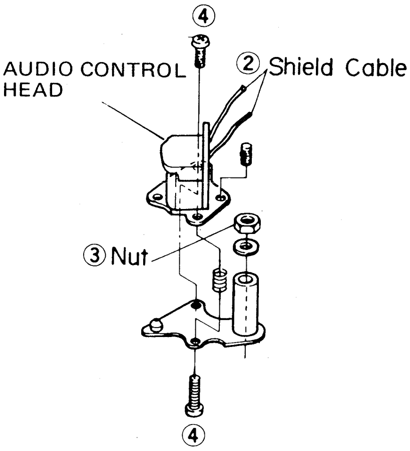

WASHER FOR STOPPER
SUPPLY REEL TABLE
THRUST BEARING
WASHER
METAL

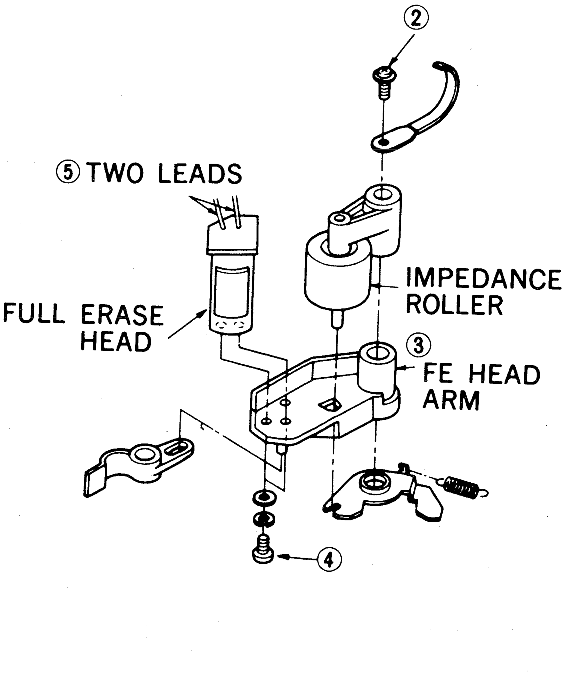

WASHER FOR STOPPER
TAKE-UP REEL TABLE
THRUST BEARING
WASHER
METAL


②
③
④
Audio control head

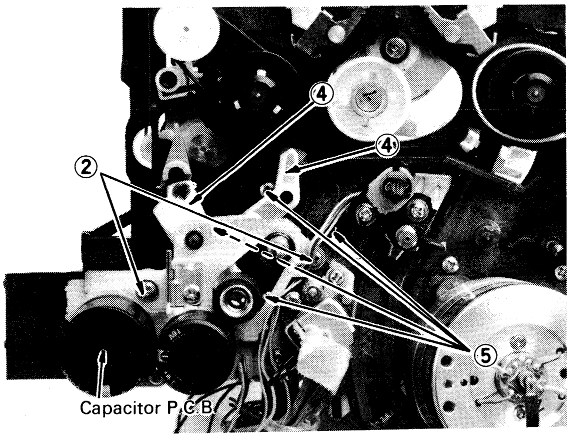
11. Audio control head
    1) Front panel, Top panel (See item 1, 2)
    2) Unsolder shield cable.
    3) Remove 1 nut.
    4) Remove 2 screws.

[Note]
Replace with a new A/C Head. It is necessary to adjust Head height, angle, X value etc.

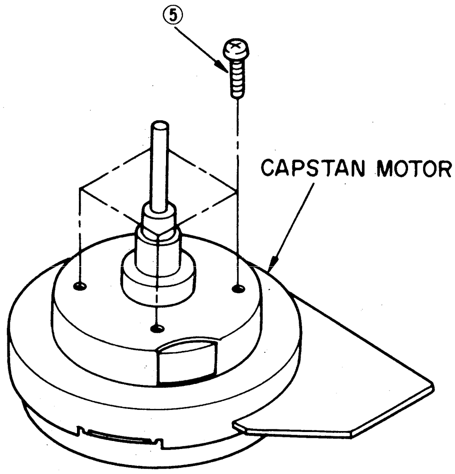

④
AUDIO CONTROL HEAD
② Shield Cable
③ Nut
④

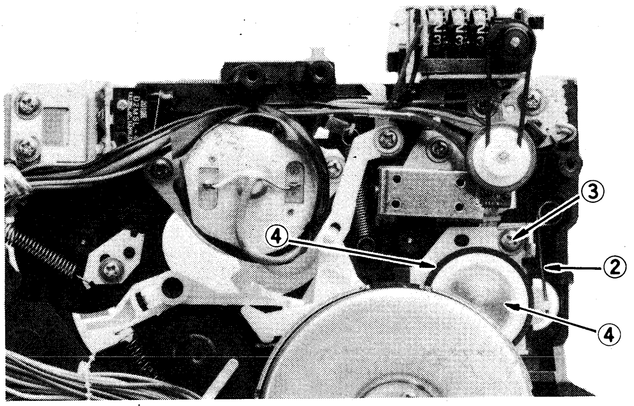

②
⑤ TWO LEADS
FULL ERASE HEAD
IMPEDANCE ROLLER
③
FE HEAD ARM
④

12. Full erase head
    1) Front panel, Top panel (See item 1, 2)
    2) Remove 1 screw.
    3) Remove F E head arm.
    4) Remove 2 screws.
    5) Unsolder the two leads.

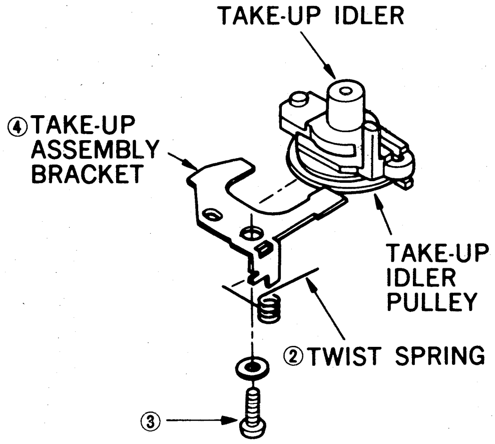

④
④
②
⑤
Capacitor P.C.B.

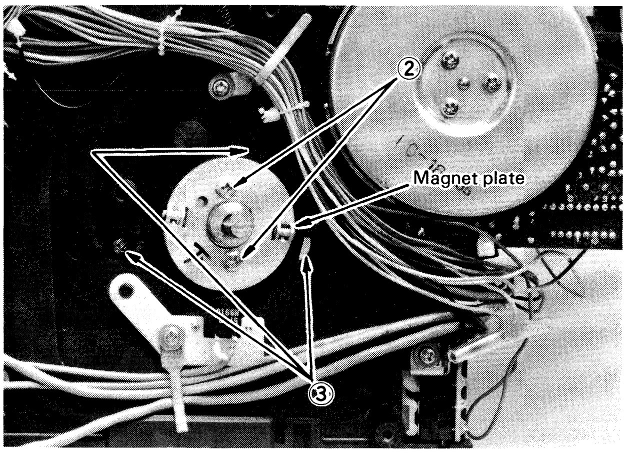
13. D-D capstan motor
    1) Remove cassette holder assembly. (See item 6)
    2) Remove 2 screws.
    3) Remove spring from spring arm to pinch roller arm.
    4) Remove pinch roller arm and lever for connecting lever.
    5) Remove 4 screws.
    6) Remove D-D Capstan Motor gently towards the bottom.


⑤
CAPSTAN MOTOR

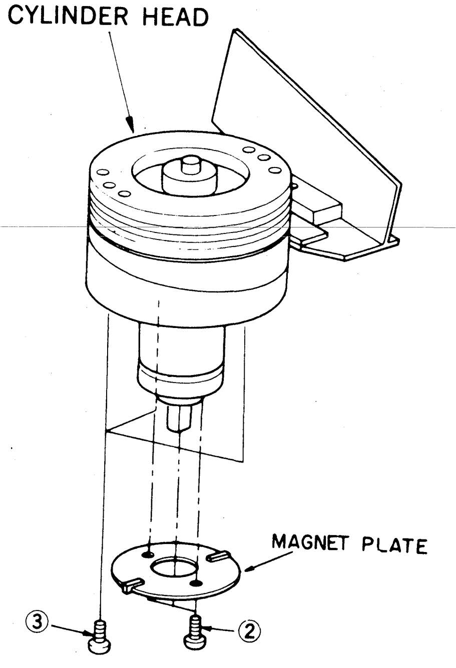


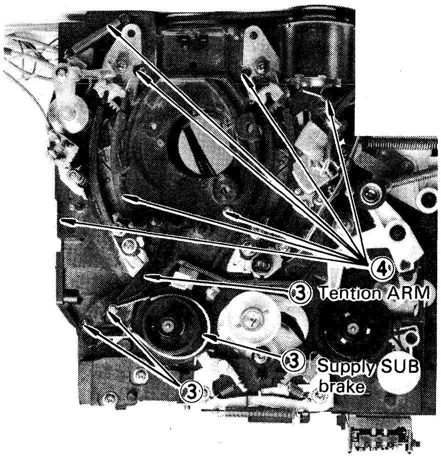
14. Take-up idler
    1) Remove Main P.C.B. (See item 5)
    2) Remove Take -up Idler twist spring.
    3) Remove screw holding take-up Assembly Bracket.
    4) Remove Take -up Assembly and Bracket simultaneously towards the bottom.


TAKE-UP IDLER
④TAKE-UP ASSEMBLY BRACKET
TAKE-UP IDLER PULLEY
②TWIST SPRING
③

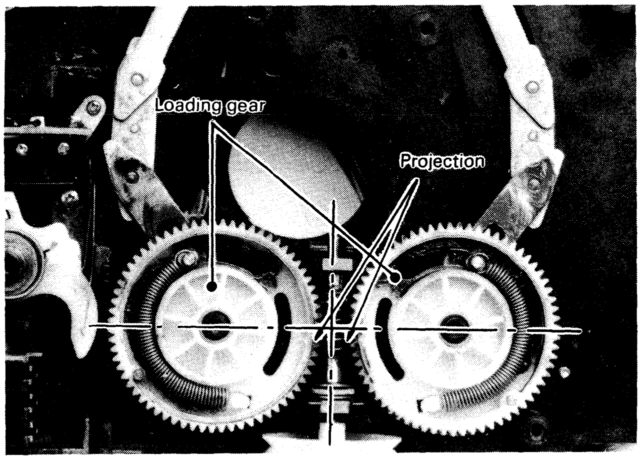

②
Magnet plate
③

15. D-D cylinder head
    1) Remove Main P.C.B. (See item 5)
    2) Remove 2 screws.
    3) Remove 3 screws.


CYLINDER HEAD
MAGNET PLATE
③
②

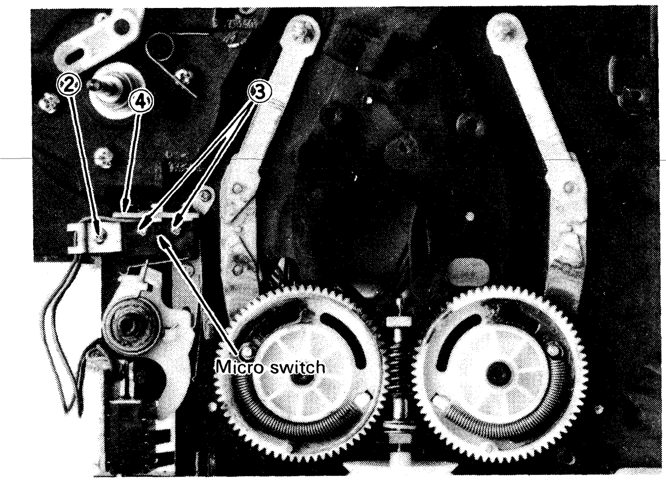

④
③ Tention ARM
③ Supply SUB brake
③

16. Sub Chassis
    1) Remove D-D cylinder head (See item 15)
    2) Rotate cassette holder (See item 4)
    3) Remove E-ring for tension arm and supply sub Brake.
    4) Remove 7 screws.

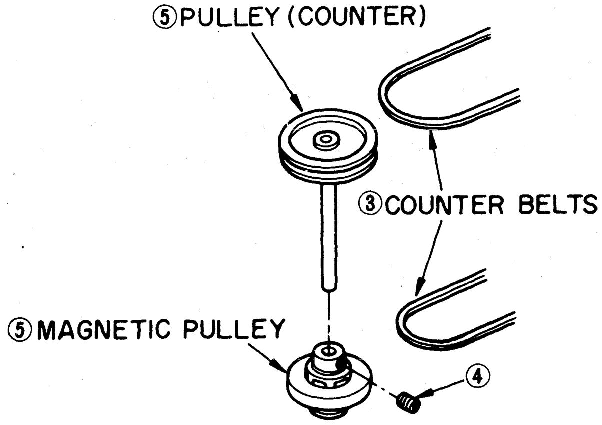

Loading gear
Projection

17. Loading gear
   1) Remove sub chassis (See item 16)

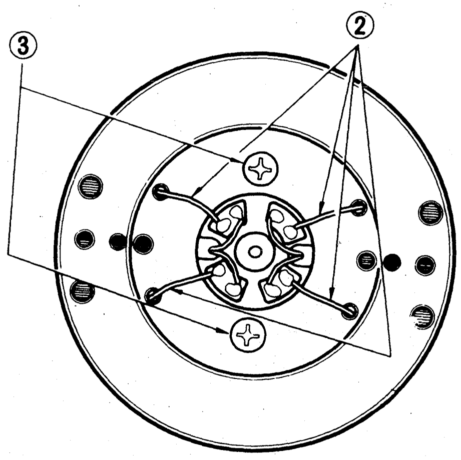
[Note]
Be careful to ensure that the projections inside the gearwheels are in a straight line when replacing the loading gear.


②
④
③
Micro switch

18. Micro switch (4) (pause switch)
   1) Remove sub chassis (See item 16)
   2) Remove 1 screw.
   3) Remove 2 screws.
   4) Unsolder 2 leads.


⑤PULLEY (COUNTER)
③COUNTER BELTS
⑤MAGNETIC PULLEY
④

19. Counter pulley
   1) Remove Main P.C.B. (See item 5)
   2) Rotate cassette holder (See item 4)
   3) Remove 2 counter belts.
   4) Remove set screw holding pulley using HEX WRENCH.
   5) Remove pulley with shaft towards the top and magnetic pulley towards the bottom.

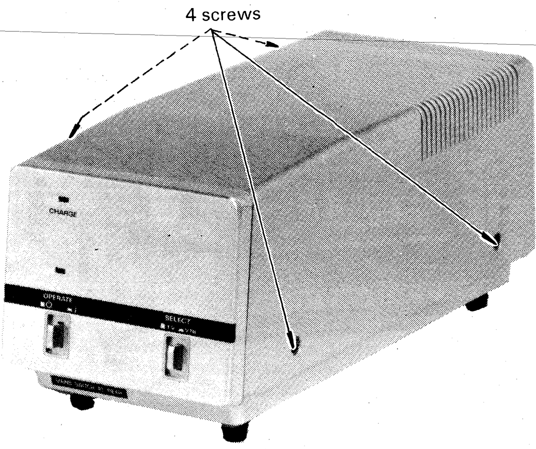


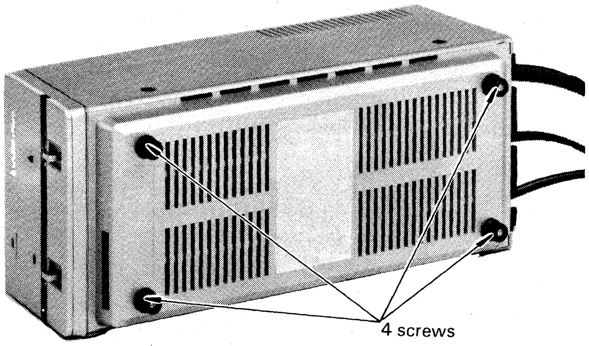
20. Upper cylinder
    1) Remove Front panel, Top panel (See item 1, 2)
    2) Unsolder 4 leads.
    3) Remove 2 screws.

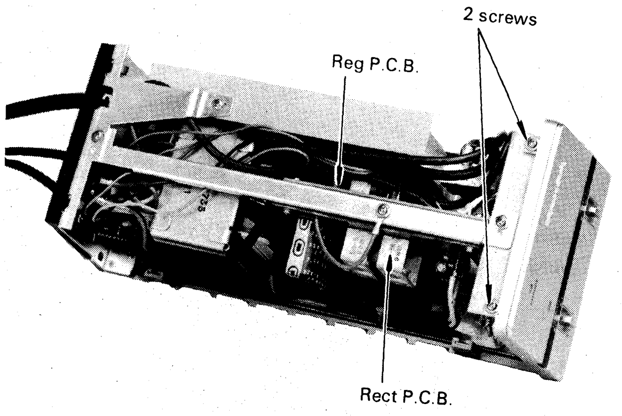
[Note]

Do not touch either video head (located in base of upper cylinder) during servicing.

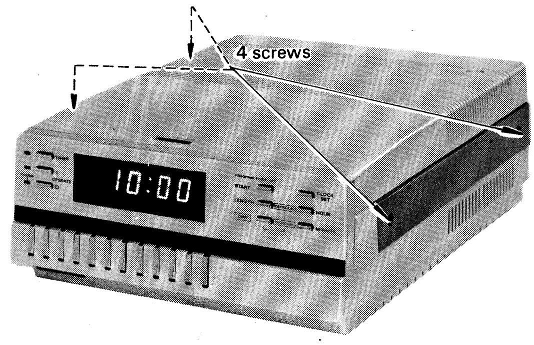
DISMANTLING — ADAPTOR

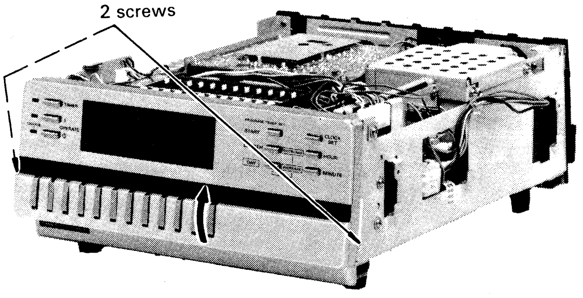

4 screws
CHARGE
OPERATE
SELECT

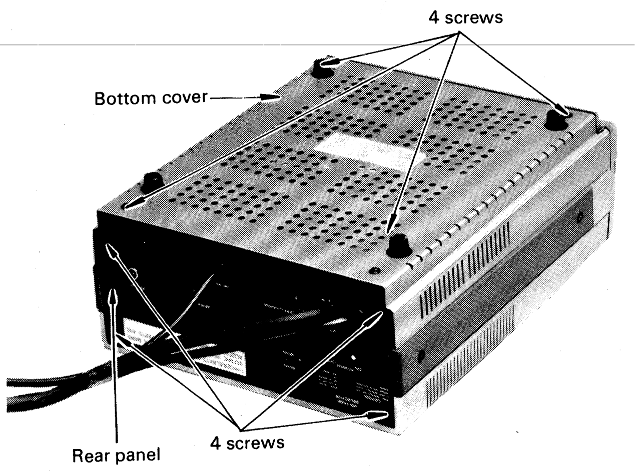


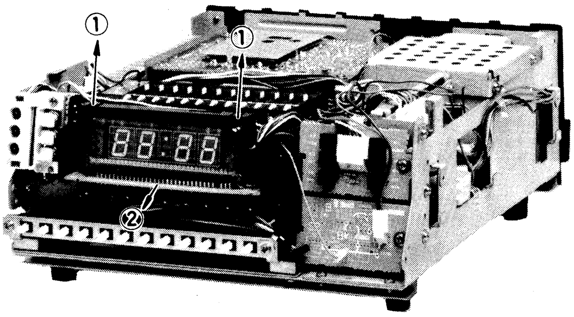

2 screws
Reg P.C.B.
Rect P.C.B.

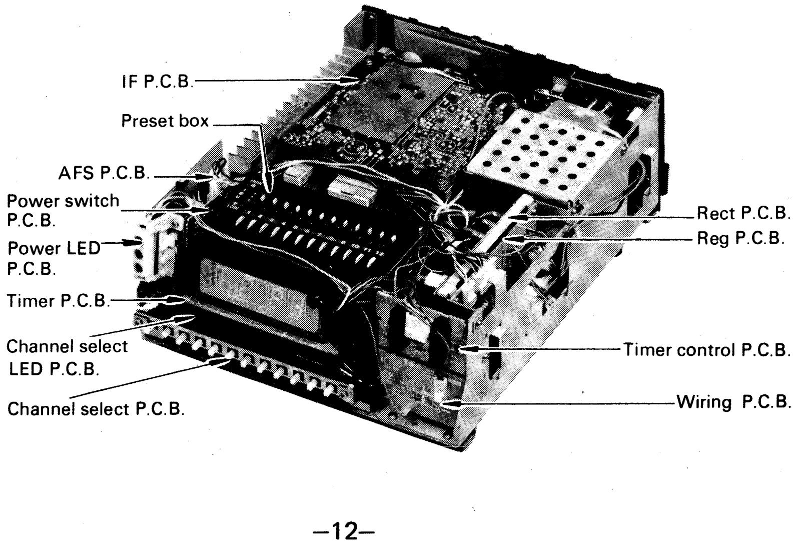
DISMANTLING — TUNER


4 screws
10:00



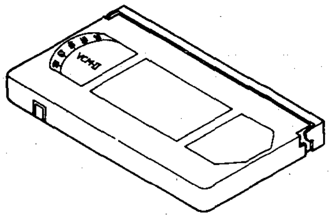
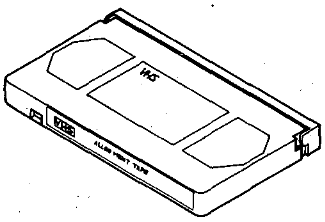
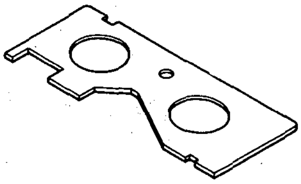
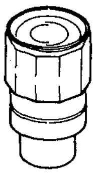
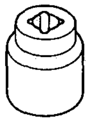
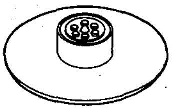
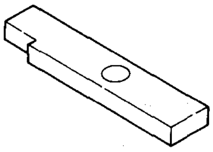
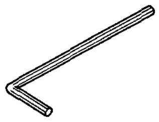
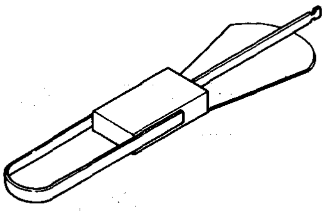

4 screws
Bottom cover
Rear panel
4 screws




IF P.C.B.
Preset box
AFS P.C.B.
Power switch P.C.B.
Power LED P.C.B.
Timer P.C.B.
Channel select LED P.C.B.
Channel select P.C.B.
Rect P.C.B.
Reg P.C.B.
Timer control P.C.B.
Wiring P.C.B.

ADJUSTMENT

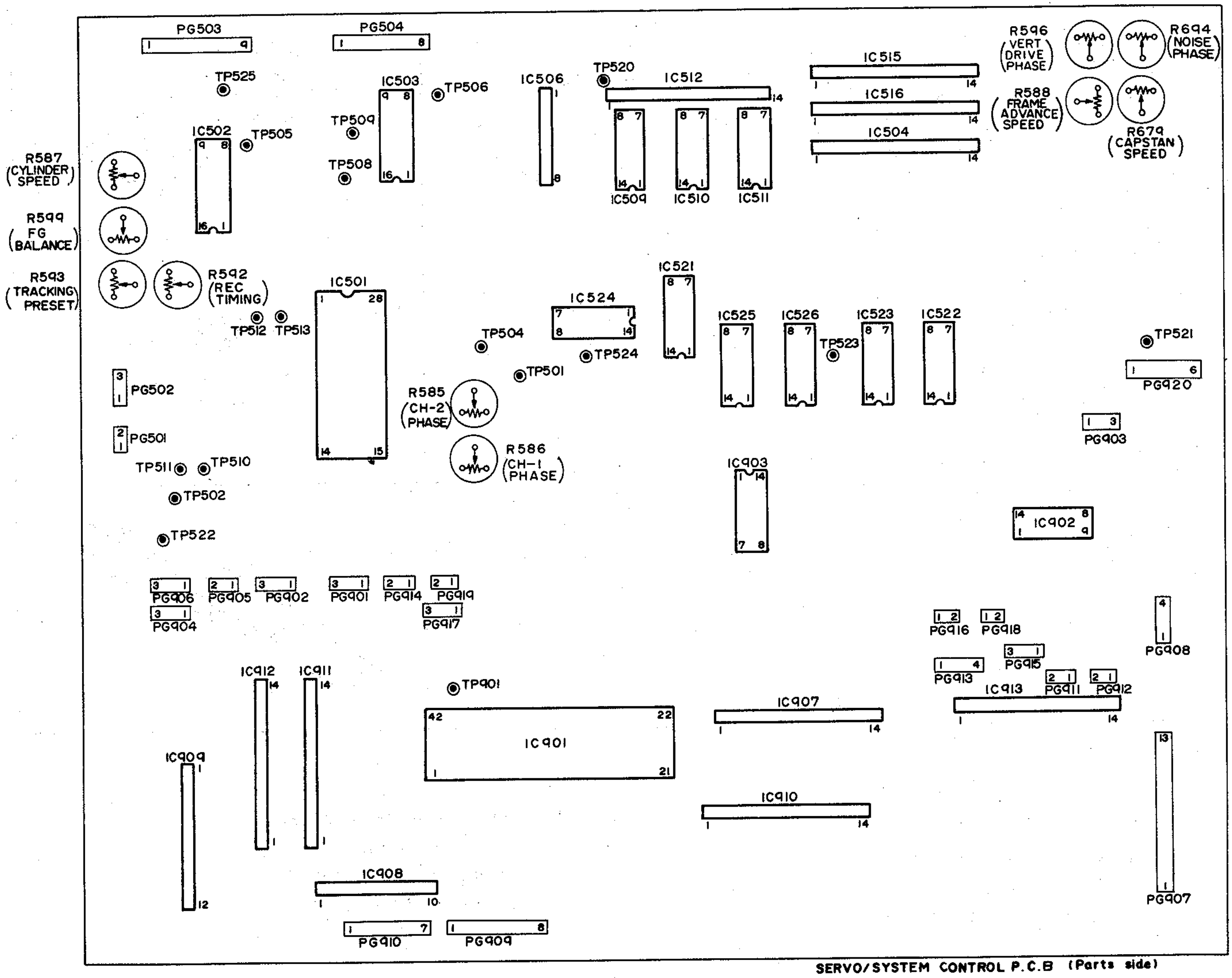
SERVICING JIGS AND TOOLS

1 	2 	3 
4 	5 	6 
7 	8 	9 

1. Back tension meter
2. Alignment tape
3. Height reference plate
4. Torque gauge
5. Torque gauge adaptor
6. Tension measurement reel
7. Reel disk height jig
8. 1.5 mm hexagonal wrench
9. Fan type tension gauge

ELECTRICAL CIRCUIT ADJUSTMENT

ADJUSTMENT OF SERVO CIRCUIT


PG503
PG504
TP525
IC503
TP506
IC506
TP520
IC512
IC515
IC516
IC504
R596 (VERT DRIVE PHASE)
R694 (NOISE PHASE)
R588 (FRAME ADVANCE SPEED)
R679 (CAPSTAN SPEED)
IC502
TP505
TP509
TP508
R587 (CYLINDER SPEED)
R599 (FG BALANCE)
R593 (TRACKING PRESET)
R592 (REC TIMING)
IC509
IC510
IC511
IC521
IC501
IC524
TP512
TP513
TP504
TP524
TP501
IC525
IC526
IC523
IC522
TP523
TP521
PG920
PG502
PG501
R585 (CH-2 PHASE)
R586 (CH-1 PHASE)
PG903
TP511
TP510
TP502
TP522
IC903
IC902
PG906
PG905
PG902
PG901
PG914
PG919
PG904
PG917
PG916
PG918
PG908
PG915
PG913
IC913
PG911
PG912
IC912
IC911
TP901
IC907
IC901
IC909
IC910
IC908
PG907
PG910
PG909

SERVO/SYSTEM CONTROL P.C.B (Parts side)

1. **Confirmation of sync separator input signal**
   1) Load a blank tape and record colour bar signal (or TV signal).
   2) Connect a scope probe (2V/div.; 5 ms/div.) to between CN402-8.
   3) Confirm that the level of composite sync signal is approx. 8 Vp-p. (Fig. 1)

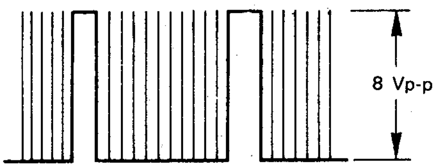


Fig. 1

2. Confirmation of reference oscillator frequency

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 — 24.
3) Confirm that approx. 7 Vp-p, 40.0 ms trapezodial wave at PB, 47.6 ms trapezoidal wave at REC is generated. (Fig. 2)

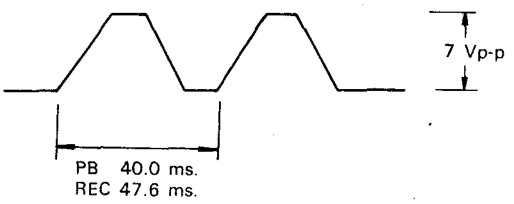


Fig. 2

3. Confirmation of capstan sample pulse

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 — 27.
3) Confirm that approx. 4.5 Vp-p square wave is generated. (Fig. 3)

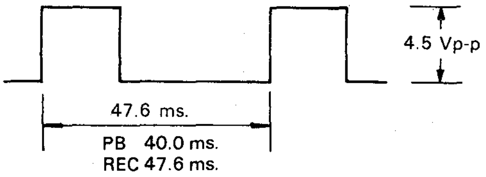


Fig. 3

4. Adjustment of cylinder FG balance: R599

1) Load a alignment tape and set the unit to PLAY mode.
2) Connect soope probe to TP525.
3) Adjust R599 so that the variation of ripple level is minimum. (Fig. 4).

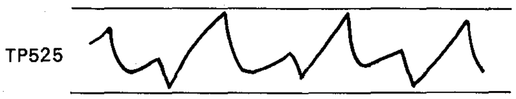


Fig. 4

5. Adjustment of frame advance speed: R588

1) Load the alignment tape and playback the middle of the tape.
2) Connect a scop probe to TP509.
3) Place the unit in the frame advance mode.
4) Adjust R588 so that the cycle of sawtooth wave is 27 ms.

6. Adjustment of capstan speed: R679

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP504.
3) Short-circuit TP512 and TP513.
4) Observe the differential pulse which indicates sample position of trapezoidal wave, and adjust R679 so that the pulse stops as compared eith a trapezoidal wave.
5) Open-circuit TP512 and TP513, and confirm that the positive differential pulse stops at about the center of the rising slope of trapezoidal wave. (Fig. 5)

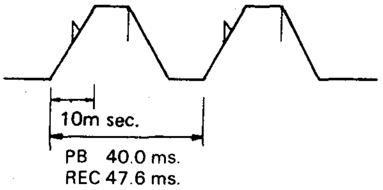


Fig. 5

7. Confirmation of playback capstan trapezoidal wave

1) Load a alignment tape and playback it.
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP504.
3) Confirm that approx. 7 Vp-p, 40.0 ms trapezoidal wave and the positive differential pulse indicating sample position is at about the center of the rise slope of trapezoidal wave.

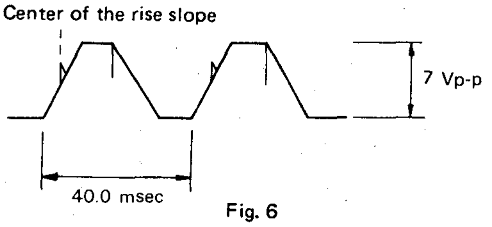


Fig. 6

8. Confirmation of control pulse

1) Insert a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to IC501 — 4.
3) Confirm that approx. 4.5 Vp-p, 40.0 msec rectangular wave is generated.

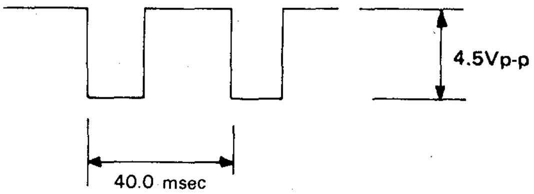


Fig. 7

9. Adjustment of cylinder speed: R587

1) Load a blank tape and record colour bar signal (or TV signal).
2) Short-circuit TP510 and TP511.
3) Apply external synchronization with the signal from TP501.
4) Connect a scope probe (2V/div.; 5 ms/div.) to TP502.
5) Adjust R587 so that the differential pulse stops as compared with a trapezoidal wave.
6) Open-circuit TP510 and TP511, and confirm that the differential pulse stops at about the center of the fall slope of trapezoidal wave.

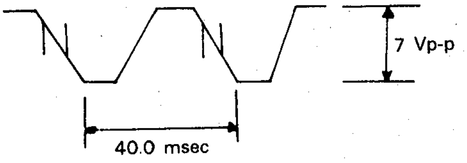


Fig. 8

10. Confirmation of playback servo

1) Insert an alignment tape and playback it.
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP502.
3) Confirm that the positive differential pulse indicating sample position is at about the center of the fall slope of trapezoidal wave.

11. Confirmation of head switching pulse

1) Load a blank tape and record colour bar signal (or TV signal).
2) Connect a scope probe (2V/div.; 5 ms/div.) to TP501.
3) Confirm that approx. 8.5 Vp-p, 40.0 msec square wave is generated.

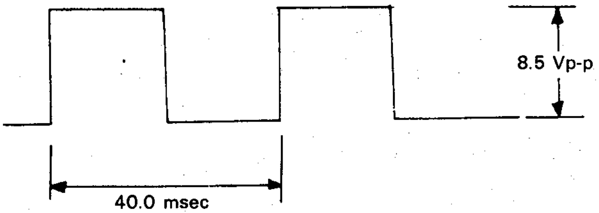


Fig. 9

12. Adjustment of head switching point:
R586 (CH1 Phase control)
R585 (CH2 Phase control)

This adjustment positions the video head switching point so that the head switching occurs 6.5 horizontal lines before the start of the vertical sync pulse or 3 lines before the start of equalizing pulse.

1) Load an alignment tape and playback it.
2) Connect a scope probe (0.1V/div.; 200 μs/div.) to video output jack on the rear of instrument.
3) Set the synchronizing range of the oscilloscope to "⊖".
4) Apply synchronization with the signal (square wave) from TP501.
5) Set the sync slope of the oscilloscope to "⊖".
6) Adjust R586 so that front porch phase of V. sync is delayed by 6.5 H behind the external sync phase.
7) Set the sync slope of the oscilloscope to "⊕".
8) Adjust R585 in the same way.

NOTE: If is difficult to count 6.5H, so adjust R586 and R585 so that the equivalent pulse is approx. 416 μsec (4 H) after trigger position.
If head switching occurs too soon, a narrow noise band may appear at the bottom of the picture.
If the head switching pulse is late, noise can be introduced during vertical sync, resulting in possibly vertical sync problems.

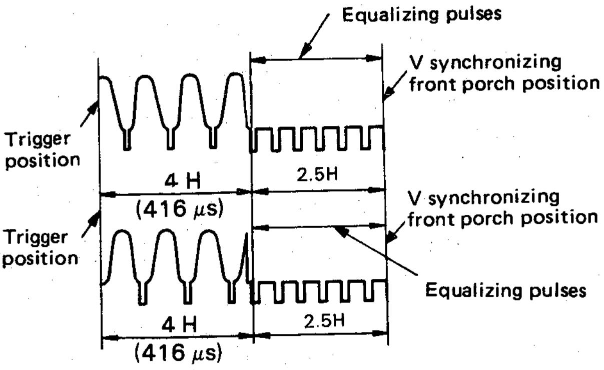


Fig. 10

13. Adjustment of record timing: R592

1) Load a blank tape and record colour bar signal (or TV signal).
2) connect a scope probe (0.5V/div.; 100 μs/div.) to video output jack.
3) Set the synchronizing range of oscilloscope to "⊖".
4) Apply synchronization with the signal (square wave) from TP501.
5) Adjust R592 so that the trigger position is 6.5H before the start of the vertical sync pulse.

14. Adjustment of tracking preset: R593

1) Load a blank tape and record colour bar signal (or TV signal) for 1 – 2 minutes.
2) Connect a scope probe to TP205 (FM output signal).
3) Set the synchronizing range of the oscilloscope to "EXT" and apply synchronization with the signal (square wave) from TP201 of Y Demodulator board.
4) Rewind the tape to the beginning of item (1) recording and playback the recorded section.
5) Set the tracking volume to its click position.
6) Adjust R593 to the position where the envelopes of both CH1 and CH2 start trailing.

NOTE: After performing this adjustment, check and adjust as in "After replacing upper cylinder".

15. Adjustment of noise phase: R694

1) Playback the tape which was recorded on this VTR.
2) Connect an oscilloscope to TP501 and TP524 and set the oscilloscope to the "CHOP" mode.
   Set the slope of the channel (TP524 side) to "⊖".
3) Adjust R694 so that the pulse at TP501 by 3.5 ±0.1 ms.

16. Adjustment of VD phase: R596

1) Playback the tape which was recorded on this VTR in STILL mode.
2) Adjust R596 so that the fluctuation of the picture becomes minimum.

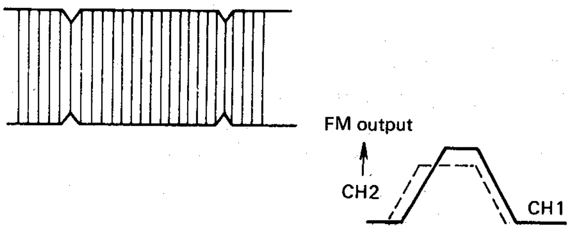
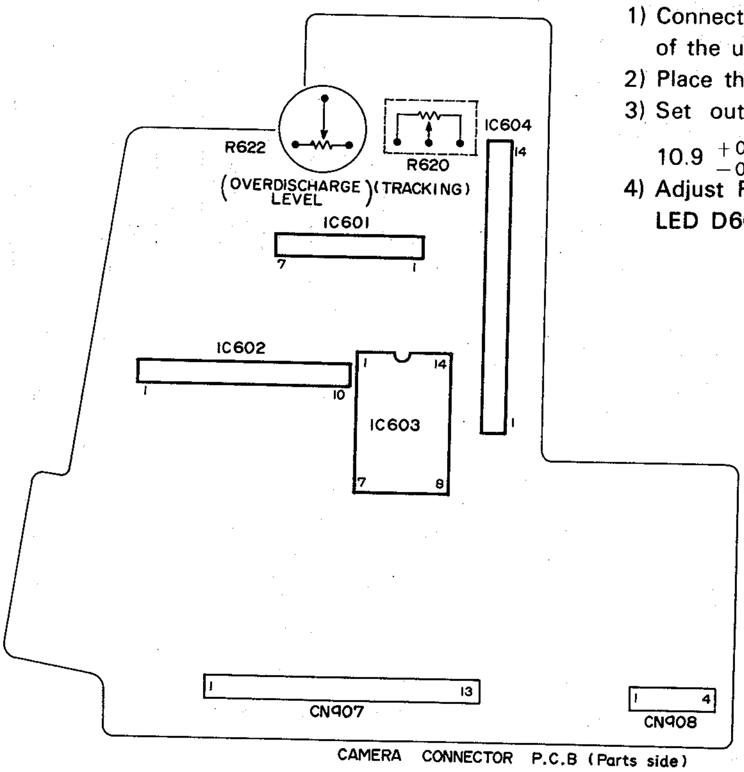


Fig. 11

ADJUSTMENT OF INDICATOR CIRCUIT

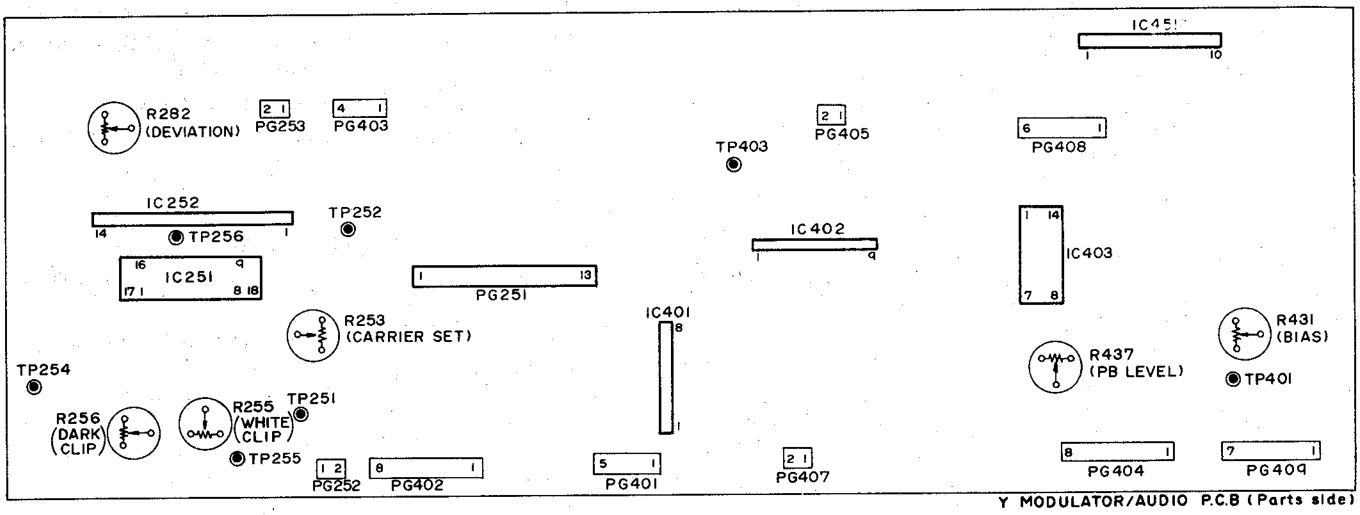


CAMERA CONNECTOR P.C.B (Parts side)

Overdischarge level adjustment: R622

1) Connect DC power supply to the Internal battery jack of the unit.
2) Place the unit in "Stop" mode.
3) Set output voltage of the DC power supply to $10.9^{+0.1}_{-0}$ V.
4) Adjust R622 so that the brightness between a red LED D607) and green LED (D606) may be same.

ADJUSTMENT OF VIDEO SIGNAL CIRCUIT


IC451
R282 (DEVIATION)
PG253
PG403
TP403
PG405
PG408
IC252
TP256
TP252
IC402
IC403
IC251
PG251
R253 (CARRIER SET)
IC401
R431 (BIAS)
TP254
R437 (PB LEVEL)
TP401
R256 (DARK CLIP)
R255 (WHITE CLIP)
TP251
TP255
PG252
PG402
PG401
PG407
PG404
PG409

Y MODULATOR/AUDIO P.C.B (Parts side)

1. Adjustment of carrier set and deviation: R253, R282

1) Load the dummy plug into the video input jack located on the back of instrument.
2) Connect the 22 kΩ resistor between TP256 and TP255 of IC251.
3) Connect the frequency counter to TP252.
4) Place the instrument in the "RECORD" mode.
5) Turn dark clip control R256 white clip control R255 and R282 fully clockwise.
6) Adjust R253 so that the frequency is 3.8 MHz ± 0.1 MHz
7) Pull out the dummy plug inserted into the video input jack and remove the resistor between pins 13 and 17 of IC251 and input the colour bar signal (half-colour bar signal) of which level is approx. 1 Vp-p and V/S is 7/3 with 100% white signal to the video input jack.
8) Connect a scope probe to TP251.
9) Adjust deviation control R282 so that the video signal is 0.79 Vp-p.

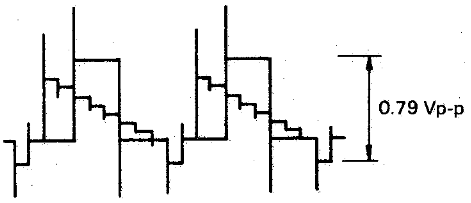


Fig. 12

2. Adjustment of white clip and dark clip: R255,R256

1) Input the colour bar signal (half-colour signal) of which level is approx 1 Vp-p and V/S is 7/3 with white signal to the video input jack.
2) Connect a scope probe (0.5V/div.; 20 μsec/div.) to TP251.
3) Assuming that the white signal is 100% as shown in the figure, adjust R255 so that overshoot appears 75 ±5% on the white peak side, and adjust R256 so that the undershoot appears 50 ±5% on the sync tip side.

NOTE: Perform this adjustment after checking that the V/S of video input signal is 7/3 and the adjustment carrier set and deviation is completed.

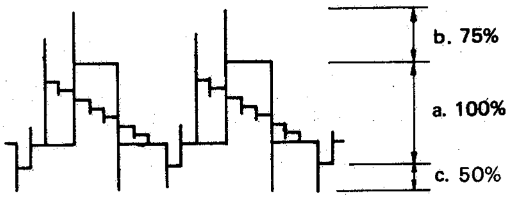
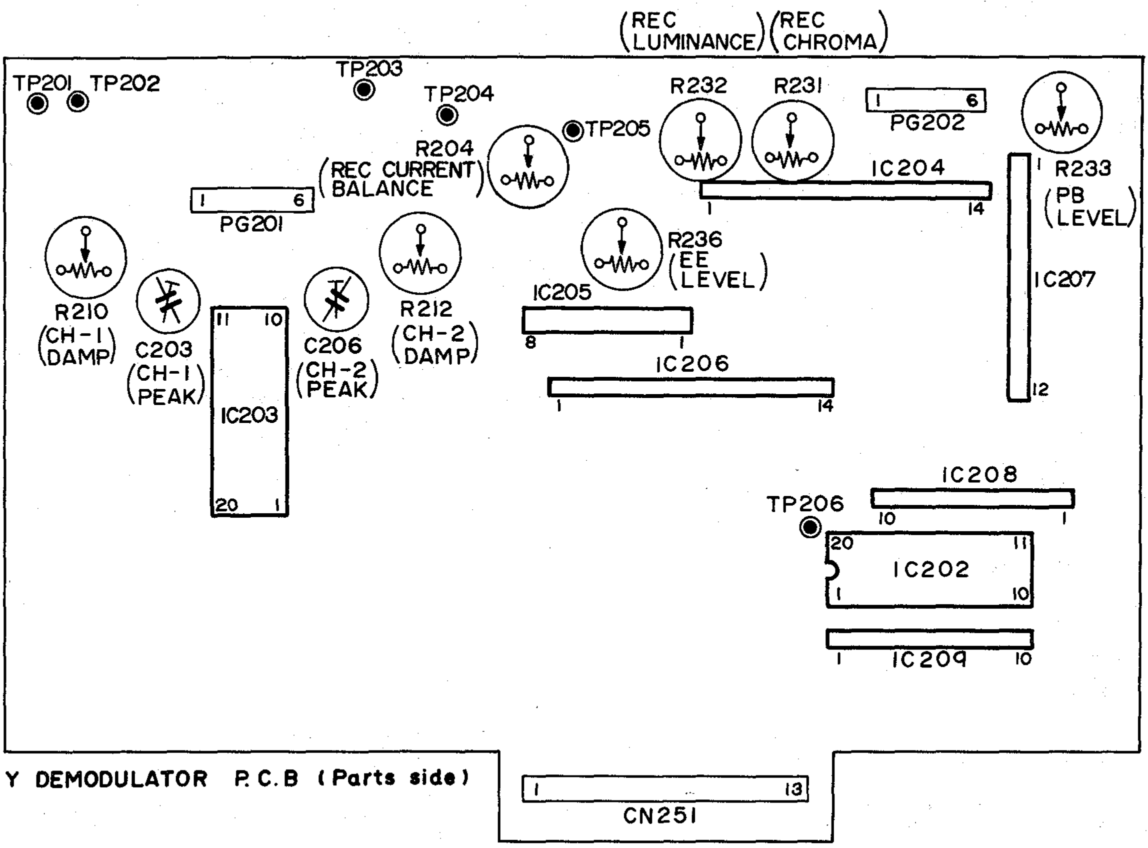

b. 75%
a. 100%
c. 50%

Fig. 13


REC LUMINANCE
REC CHROMA
TP201
TP202
TP203
TP204
TP205
R204
REC CURRENT BALANCE
R232
R231
PG202
IC204
R233
PB LEVEL
PG201
R236
EE LEVEL
IC205
IC207
R210
CH-1 DAMP
C203
CH-1 PEAK
IC203
C206
CH-2 PEAK
R212
CH-2 DAMP
IC206
IC208
TP206
IC202
IC209
CN251

Y DEMODULATOR P.C.B (Parts side)

NOTE: The following adjustment for video circuit can be performed after the adjustments of video circuit on Y MODULATOR board are completed.

3. Adjustment of EE level: R236

1) Input the colour bar signal (of half-colour bar signal) of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (1V/div.; 20 μs/div.) to the video output jack.
3) Place the instrument in the "RECORD" mode.
4) Adjust R236 so that the waveform of output jack is 1.8Vp-p ±10%.

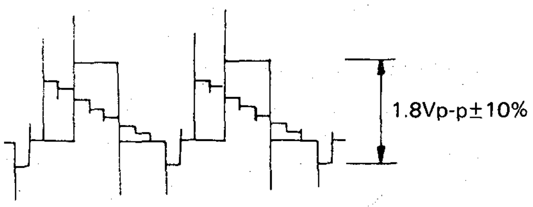


Fig. 14

4. Adjustment of record chroma level: R231

1) Apply the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Turn R232 fully counterclockwise.
3) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP202.
4) Place the instrument in the "RECORD" mode.
5) Adjust R231 to set the burst signal at the value as follows.

Mark on the cylinder	Adjusting value CH1 CH2 (mVp-p)
0	30
1	35
2	40
3	40
4	45

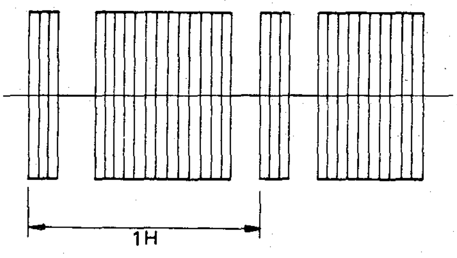


Fig. 15

5. Adjustment of record current balance: R204

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP204.
3) Place the instrument in the "RECORD" mode.
4) Adjust R204 for the same value as "Record chroma level".

6. Adjustment of record luminance level: R232

1) Apply the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a scope probe (20 mV/div.; 20 μs/div.) to TP202.
3) Place the instrument in "RECORD" mode.
4) Adjust R232 to set the sync tip at 170m Vp-p.

NOTE: After performing this adjustment, take the following.
1. Insert a blank tape and record colour bar signal.
2. Play back the recorded colour bar signal.
3. Confirm that there are no crossbeats on TV screen.

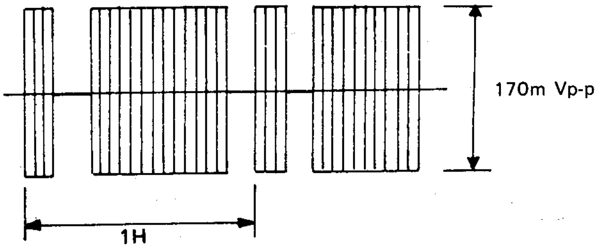


Fig. 16

Head CH-1 Peaking/Damping adjustment:
Change over the SG signal to 4.4 MHz and adjust CH-1 peak control (C203) so that the signal (4.4 MHz) when the SW 25 Hz signal is "L" at max. amplitude.
Adjust R210 so that the amplitude of the 4.4 MHz signal is 5 times (14 dB) the amplitude of the 1 MHz signal.

Head CH-2 Peaking/1 Damping adjustment: R212
In the same way as for CH-1 adjustment, adjust CH-2 peak control (C206) so that the 4.4 MHz signal is at max. amplitude when the SW 25 Hz signal is "H".
Adjust R212 so that the amplitude of the 4.4 MHz signal is 5 times the amplitude of the 1 MHz signal.

NOTE: Be sure to remove the paper inserted between the supply side tape end sensor and the lamp.

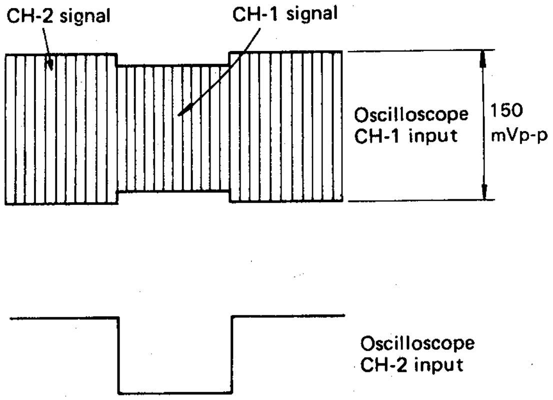


Fig. 17

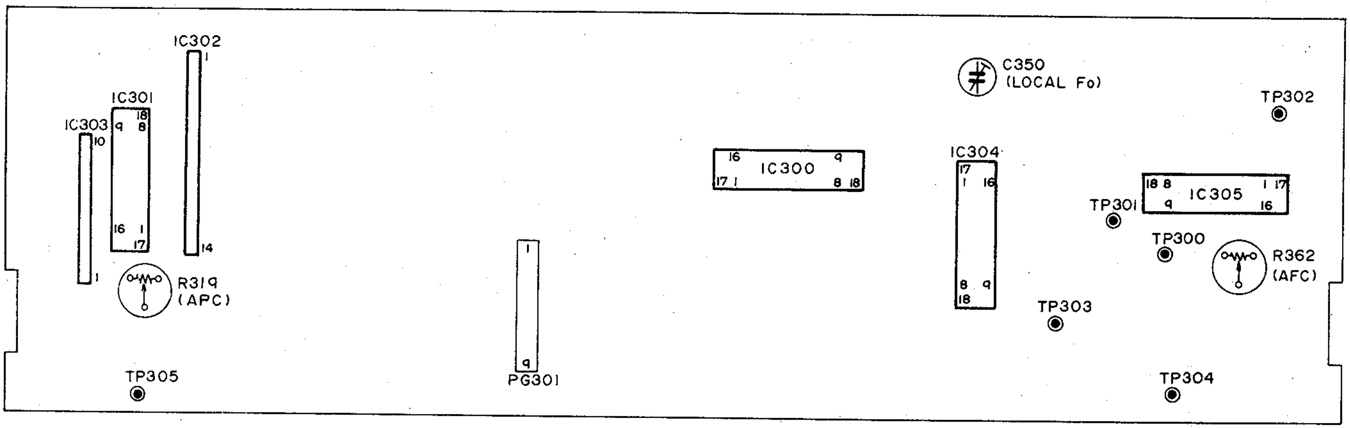
7. Adjustment of peaking and damping

1) Insert a paper between the supply side end sensor and the lamp.
2) Place the instrument in the "PLAY" mode without the cassette tape inserted.
3) Connect a signal generator (SG) to TP203.
4) Connect CH-2 scope probe (0.02V/div.; 10 ms/div.) to TP205 and CH-1 scop probe to TP205.
5) Set the oscilloscope CH-1 (0.02V/div.; 10 ms/div.) to trigger mode.)
6) Input 1 MHz signal from the signal generator so that the waveform on the oscilloscope is as shown in Fig. 18 and the output level is approx. 100mV.

8. Adjustment of playback level- R233

1) Load a blank tape and record half-colour bar signal (or TV signal).
2) Connect a scope probe to the video output jack.
3) Playback the recorded part.
4) Adjust R233 so that the waveform of video output jack is 1.8Vp-p ±10%.

ADJUSTMENT OF CHROMA CIRCUIT



CHROMA P.C.B (Parts side)

1. Adjustment of AFC F_0: R362

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a frequency counter to TP301.
3) AC-ground TP300. (Connect a 47 μF/16V capacitor between TP300 and TP304.)
4) Place the instrument in the "RECORD" mode.
5) Adjust R362 so that the frequency measured by the counterr is 15,625 kHz ± 100 Hz.
6) Remove the capacitor between TP300 and chassis ground.

2. Adjustment of APC F_0: R319

1) Input the colour bar signal of which level is approx. 1 Vp-p and V/S is 7/3 to the video input jack.
2) Connect a frequency counter to TP302.
3) Place the instrument in the "RECORD" mode.
4) Adjust R319 so that the frequency measured by the counter is 4.435572 MHz ±20 Hz.

3. Adjustment of local F_0: C350

1) Connect a frequency counter to TP303.
2) Place the instrument in the "PLAY" mode.
3) Adjust C350 so that the frequency measured by the counter is 4.433619 MHz ± 20 Hz.

NOTE: For connecting the counter to TP305, use a 10 : 1 probe. when a 1 : 1 probe, etc. is connected to TP305, high capacitance is added and a different frequency will be measured.

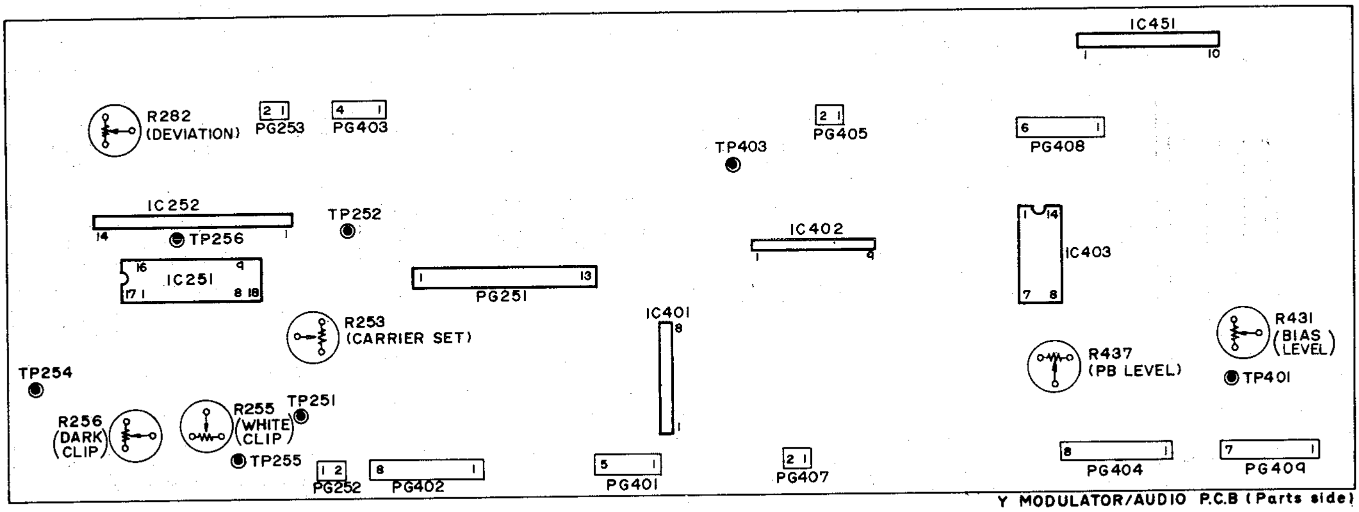
4. Confirmation of manual B/W changeover

1) Input half-colour bar signal into the video input jack.
2) Load a alignment tape and playback it.
3) Changeover switch SW251 to the "B/W" position.
4) Confirm that the colour component of the PB picture on the monitor screen died away.
5) Remove the alignment tape and load a blank tape to record half-colour bar signal.
6) Record half-colour bar signal for a few minutes.
7) Changeover SW251 to "AUTO" position and playback the recorded part.
8) Confirm that there is no colour component of the PB picture on the monitor screen.

5. Confirmation of SECAM system

1) Input SECAM colour bar signal.
2) Changeover SW251 to the center position.
3) Load a blank tape and record the SECAM signal.
4) Playback the recorded part.
5) Monitor the PB picture with a G-SECAM television set.
6) Confirm that there is no abnormality on the screen.

ADJUSTMENT OF AUDIO CIRCUIT


IC451
R282 (DEVIATION)
PG253
PG403
TP403
PG405
PG408
IC252
TP256
TP252
IC402
IC403
IC251
PG251
R253 (CARRIER SET)
IC401
R431 (BIAS LEVEL)
R437 (PB LEVEL)
TP401
TP254
R256 (DARK CLIP)
R255 (WHITE CLIP)
TP251
TP255
PG252
PG402
PG401
PG407
PG404
PG409

Y MODULATOR/AUDIO P.C.B (Parts side)

1. Adjustment of bias level: R431

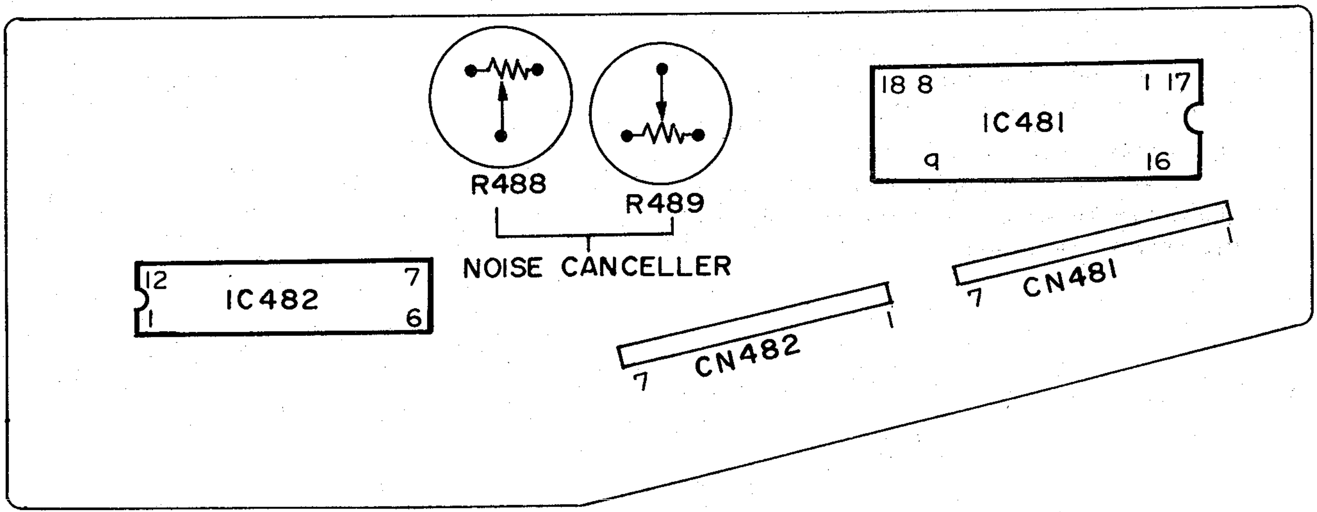
1) Input 1 kHz — 20 dBs signal to the audio input jack.
2) Connect a VTVM or a oscilloscope to TP (Audio head P.C.B.) and ground.
3) Load a blank tape and place the instrument in the "RECORD" mode.
4) Adjust R431 for 1.20 mV RMS.

2. Adjustment of playback level: R437

1) Connect a VTVM to Audio output jack.
2) Load an alignment tape and playback the sinewave signal (1 kHz tone).
3) Adjust R437 for −6 dBs.

3. Adjustment of noise canceller: R488, R489

1) Connect a VTVM to the audio output jack.
2) Load a blank tape and place the instrument in the "PLAY" mode.
3) Adjust R489 so that the output level is less than −42 dBs and minimum.
4) Adjust R488 as in item 3).


R488
R489
NOISE CANCELLER
IC481
IC482
CN481
CN482

CYLINDER MOTOR DRIVER P.C.B (Parts side)

ADJUSTMENT TABLE OF P.C. BOARDS

The following table combines and briefly describes the electrical adjustment.
Refer to each electrical adjustment for details.

[**SERVO P.C.B.**]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
SYNC separator	CN402-8	RECORD mode (Colour bar or TV broadcast)	Confirmation	8 Vp-p.
Reference oscilloator frequency	IC501 — 24	—	Confirmation	7 Vp-p 40.0 ms PB 47.6 ms REC
Capstan sample pulse	IC501 — 27	RECORD mode (Load a blank tape)	Confirmation	40.0 ms PB 47.6 ms REC
Cylinder FG	TP525	PLAY mode (Load a alignment tape)	R599	Ripple variation is minimum.
Frame advance speed	TP509	FRAME ADVANCE mode	R588	Sawtooth cycle is 27 ms.
Capstan speed	TP504	RECORD mode (Load a blank tape)	R679	Pulse stops as compared with trapezoid wave.
	TP504	RECORD mode (Load a blank tape)	Confirmation	Pulse stops at about the center of the rising slope of the trapezoidal wave.
PB capstan trapezoidal wave	TP504	PLAY mode (Alignment tape: playback the colour bar)	Confirmation	7 Vp-p 40.0m/sec. Center of the rise slope as the waveform
Control pulse	IC501 — 4	RECORD mode (Colour bar or TV broadcast)	Confirmation	4.5 Vp-p 40 ms.
Cylinder speed	TP502	RECORD mode (Colour bar or TV broadcast)	R587	Pulse flows slowly (or stops if possible)
PB cylinder Servo	TP502	PLAY mode (Alignment tape: playback the colour bar)	Confirmation	Sample pulse is on the center of the fall slope of the trapezoidal wave.
Head switching pulse	TP501	RECORD mode (Load a blank tape)	Confirmation	8.5 Vp-p 40.0 ms.
Head switching point	Video output terminal	PLAY mode (Alignment terminal)	R586 Synchronizing slope of the oscilloscope to "⊖".	6.5H before the V.SYNC front porch.
	Video output terminal	PLAY mode (Alignment terminal)	R585 Synchronizing slope of the oscilloscope to "⊕".	6.5H before the V. SYNC front porch.
Record timing	Video output terminal	RECORD mode (Colour bar signal or TV signal)	R529	6.5H before the V. SYNC front porch.
Tracking preset	TP205	PLAY mode (Playback the recorded tape)	R593	Falling point of CH-1 agrees with that of CH-2.
NOISE phase	TP524	PLAY mode	R694	Negative pulse leads the negative edge of SW25 by 3.5 ± 0.1 ms.
VD phase	TV screen	STILL mode	R596	Flactuation is minimum.

[Connector P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
ODC	D607 (Red) D606 (Green)	STOP mode	R622	Brightness between D607 and D606 may be same.

[Y. Modulator P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Carrie set and deviation	TP252	RECORD mode (Video input: No signal)	R253	3.8 MHz ± 0.1 MHz.
	TP251	RECORD mode (Video input: Colour bar)	R282	0.79 Vp-p Between sync chip and white peak.
White clip and dark clip	TP251	RECORD mode (Video input: Colour bar)	R255	B = 75 ±5%.
	TP251	RECORD mode (Video input: Colour bar)	R256	C = 50 ±5%.

[Y. Demodulator P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
EE level	Video output terminal	RECORD mode (Video input: Colour bar)	R236	1.8Vp-p ±10%
REC chroma level	TP202	RECORD mode (Video input: Colour bar)	R231	CH1 CH2 0 → 30 1 → 35 2 → 35 3 → 40 4 → 45 (mVp-p)
REC current balance	TP204	RECORD mode (Video input: Colour bar)	R204	
REC luminance level	TP202	RECORD mode (Video input: Colour bar)	R232	170m Vp-p
CH-1 Peak and damp	TP205	PLAY mode	TP203 Oscillator (SG)	100mV (1 MHz)
	TP205	PLAY mode	C203	Max. (4.4 MHz) (When the 25 Hz Signal is "L").
	TP205	PLAY mode	R210	4.4 MHz is 5 times (+ 14 dB) the amplitude of 1 MHz.
CH-2 Peak and damp	TP205	PLAY mode	TP203 Oscillator (SG)	100mV (1 MHz)
	TP205	PLAY mode	C206	Max. (4.4 MHz) (When the 25 Hz Signal is "H").
	TP205	PLAY mode	R212	4.4 MHz is 5 times (+ 14 dB) the amplitude of 1 MHz.
PB level	Video output terminal	PLAY mode (Alignment tape: Colour bar)	R233	1.8Vp-p ±10%

[CHROMA P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
AFC F_0	TP301	RECORD mode [Connect a capacitor (47 μF/16V) between TP300 and TP304]	R362	Frequency counter 15.625 kHz ± 100 Hz.
APC F_0	TP302	RECORD mode (Video input: Colour bar)	R319	Frequency counter 4.435572 ± 20 Hz.
Local F_0	TP303	PLAY mode	C350	Frequency counter 4.433619 MHz ± 20 Hz.

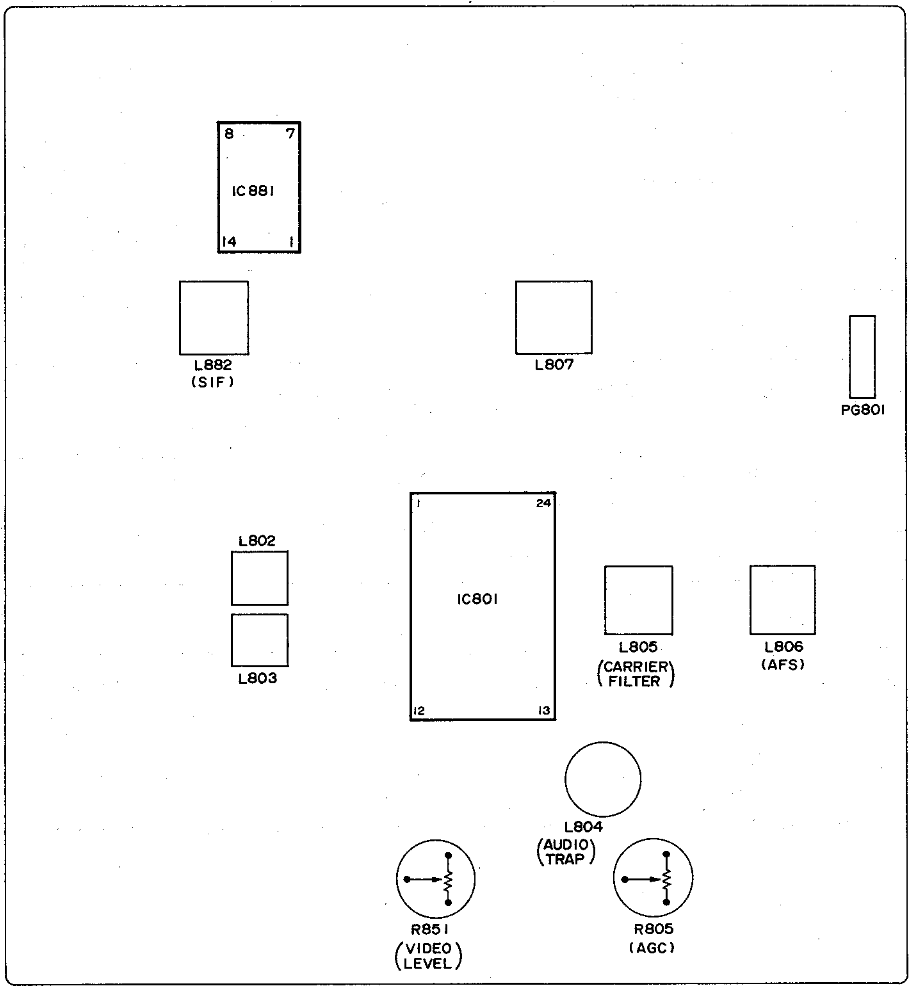
[AUDIO P.C.B.]

Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Bias level	TP492	RECORD mode (Load a blank tape)	R431	1.2 mVRMS
PB level	Audio output jack	PLAY mode (Alignment tape 1 kHz)	R437	−6 dBs.

[CYLINDER MOTOR DRIVER P.C.B.]

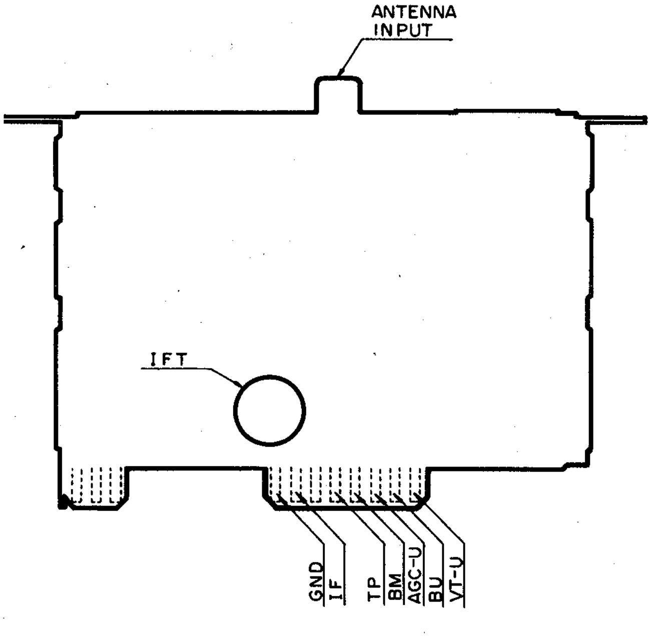
Adjustment	Test Point	Operation Mode	Adjustment Point	Measurement Value
Noise canceller	Audio output jack	PLAY mode (Load a blank tape)	R489 R488	Minimum.

ADJUSTMENT OF TUNER/IF CIRCUIT

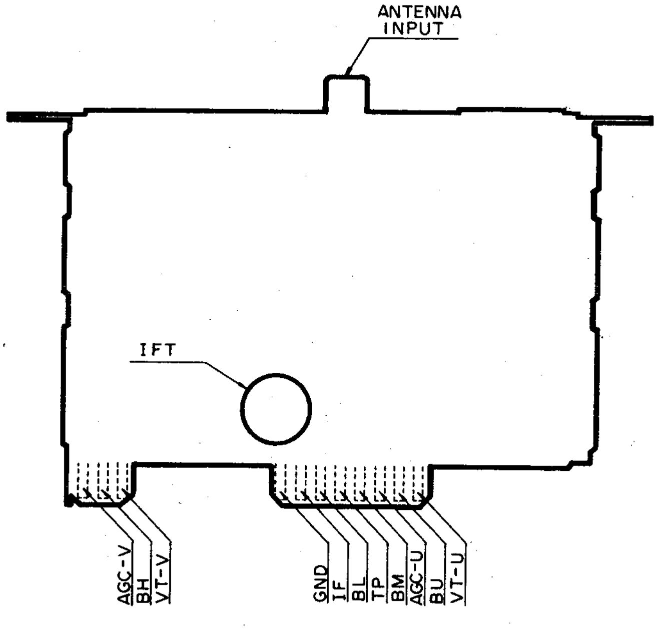

8
7
IC881
14
1
L882
(SIF)
L807
PG801
L802
L803
1
24
IC801
12
13
L805
(CARRIER FILTER)
L806
(AFS)
L804
(AUDIO TRAP)
R851
(VIDEO LEVEL)
R805
(AGC)

IF P.C.B (Parts side)

ET-546 (For the UK Model)


ANTENNA INPUT
IFT
GND
IF
TP
BM
AGC-U
BU
VT-U

ET-541 (Except for the UK model)


ANTENNA INPUT
IFT
AGC-V
BH
VT-V
GND
IF
BL
TP
BM
AGC-U
BU
VT-U

1. Adjustment of carrier filter and video amplitude

Positions to be adjusted: L805, R851.

Preparation

1) Input signal:
   Apply the following signals to the aerial input.
   a. White signal generator.
   b. RF modulator (75Ω output).
2) Connect the oscilloscope to IC801 — 24 (set to DC range).
3) Turn the operate switch on.
4) Signal level:
   −41 ± 10 dBm (converted to antenna input) 0 dBm = 1 mW.

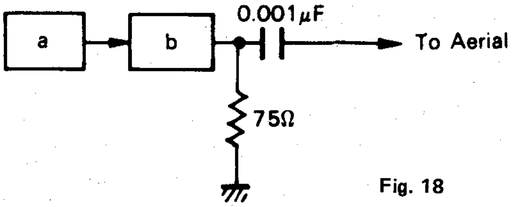

a
b
0.001μF
To Aerial
75Ω

Fig. 18

Adjustment procedure

1) Turn the core of L805 clockwise so that it touches the P.C. surface.
2) Next, turn the core gradually counterclockwise to check that the normal detection waveform appears and the white section shown in Fig. 19 is larger than minimum. Turn the core clockwise from this position and stop it in the position just before the white section begins to gets larger. Adjustment precision. b/a (shown in Fig. 19 should be 0/+0.5, −0 dB.)
3) Adjust R851 so that the p-p value of the video signal is 1.25 ±0.05 Vp-p.

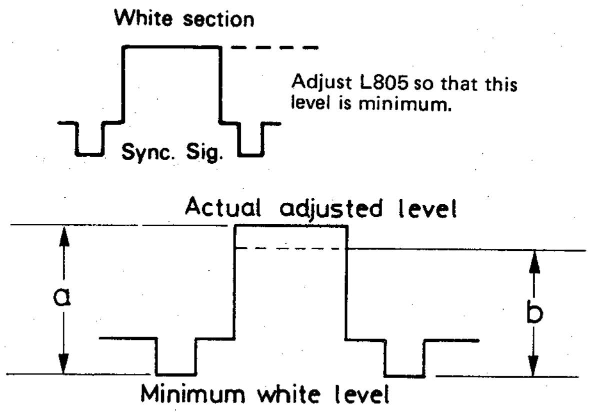

White section
Adjust L805 so that this level is minimum.
Sync. Sig.
Actual adjusted level
a
b
Minimum white level

Fig. 19

2. Adjustment of audio trap

Position to be adjusted: L804.

Preparation

1) Input signal:
   Apply the following signal to TP of ET-541 (ET-546).
   IF Sweeper.
2) Connect the oscilloscope to IC801 — 24.
3) AGC voltage:
   Connect pin 22 of IC801 to ground and apply 8.6/+1, −0V to pin 12 of IC801.
4) Connect a 50Ω resistor in parallel with L805 (between pins 18 and 19 of IC801).

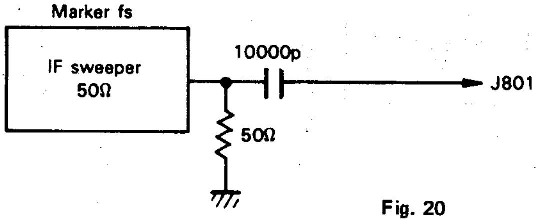
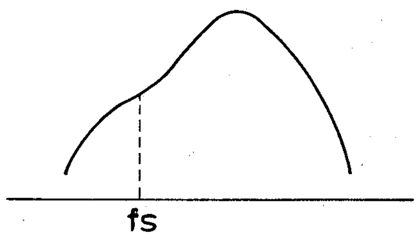

Marker fs
IF sweeper
50Ω
10000p
J801
50Ω

Fig. 20

Adjustment procedure

Adjustment L804 so that points fs of the waveform at IC801 — 24 is minimum.



fs : 33.5 MHz (For the UK model)
: 33.4 MHz (Excdpt for the UK model)

Fig. 21

3. Adjustment of AFS (Automatic Fine Setting)

Position to be adjusted: L806.

Preparation

1) Input signal:
   Apply the following signal to TP of ET-541 (ET-546).
2) Connect the voltmeter to terminal 16 of IC801.
3) AGC voltage:
   Connect pin 22 of IC801 to ground and apply 8.6V to pin 12.
4) Turn the operate switch on.
5) Adjust the output level of the signal generator so that the waveform at IC801 – 24 is 0.7 Vp-p at AM 40% modulation.

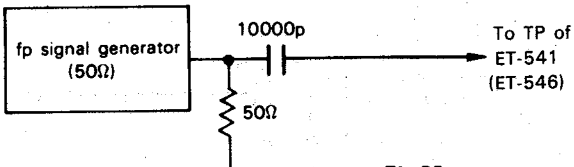


Fig.22

Adjustment procedure

Adjust L806 so that the voltmeter may be 7.0 ± 1.0V with the fp signal.

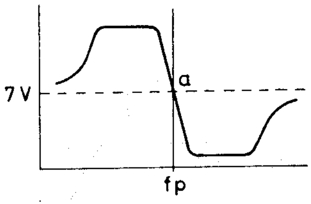


Fig. 23

4. Adjustment of SIF (Sound IF)

Position to be adjusted: L882.

Preparation

1) Apply the AM reference signal to IC881 – 2.
   Setting the output of the AM standard signal generator.
   a. Carrier wave frequency
      6.0 MHz ±5 kHz (For the UK)
      5.5 MHz ± 5 kHz (Except for the UK)
   b. Modulation frequency
      400 Hz
   c. Modulation
      AM 30%
   d. Output level
      –75 dBm ~ –55 dBm
2) Connect pin 6 of IC881 to ground (It is not necessary to do this when pin 6 is grounded).
3) Connect the oscilloscope to terminal 4 of CN801.
4) Turn the operate switch on.

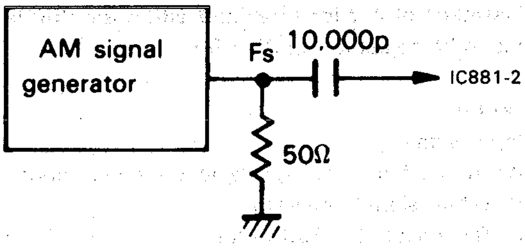


Fig. 24

Adjustment procedure

Adjust L882 so that the signal amplitude is minimum.

5. Adjustment of PIF (Picture IF)

Position to be adjusted: IFT of ET-541 (ET-546)

Preparation

Sweeper method (Simple method):

1) The following voltage applied to the tuner.

Terminal Name	ET-541			ET-546
	voltage applied			voltage applied
	VHF		UHF	
	2~4CH	5~CH		
AGC-V	5.6V	5.6V		
BH	–	12V	–	
VT-V	2~25V	2~25V		
GND	0V	0V	0V	0V
IF				
BL	12V	–	–	
TP				
BM	12V	12V	12V	12V
AGC-U	–	–	5.6V	5.6V
BU	–	–	12V	12V
VT-U	–	–	1.2~28V	1.2V~28V

2) Voltage applied to the P.C. Board.

Position where voltage is to be applied	Voltage applied
+12V line	12V
IC801 22 pin	0V
IC801 12 pin	8.6 ~ 0.1V

3) Connect a 50Ω resistor in parallel with L805 (between pin 18 and 19 of IC801).
4) Connect the oscilloscope to TP801.

Adjustment procedure

Adjust the coil IFT so that the peak of the waveform is around the band's center and the maker level is within the following values.

ET-541	ET-546
1.2Vp-p pf = 38.9 MHz fc =34.47 MHz fs = 33.4 MHz	1.2Vp-p pf = 39.5 MHz fc = 35.07 MHz fs = 33.5 MHz

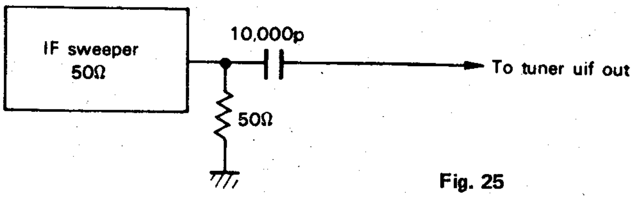
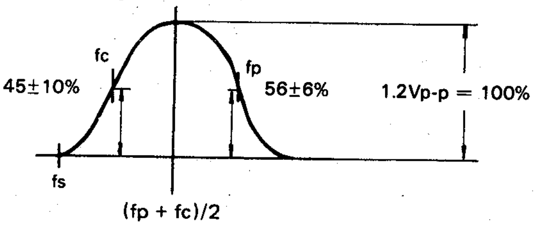


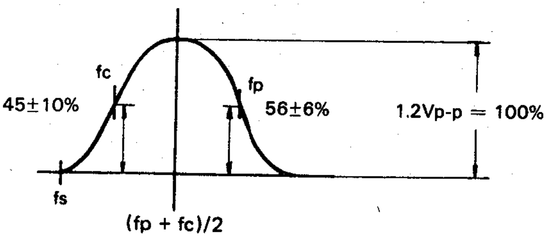
Fig. 25

[For ET-546]



fp = 39.5 MHz
fc' = 35.07 MHz
fs = 33.5 MHz

[For ET-541]



fp = 38.9 MHz
fc' = 34.47 MHz
fs = 33.4 MHz

Fig. 26

6. Adjustment of AGC (Automatic Gain Control)

Position to be adjusted: R805

Preparation

1) Apply the RF signal to the aerial terminal Signal level: −49 dBm, (aerial input).
2) Connect the voltmeter to the AGC terminal of tuner. Use a voltmeter with an internal impedance of more than 100 kΩ.

Adjustment procedure

Measure the voltage when there is no signal at the beginning. (Assume this voltage to be V1).
Next, input the signal and adjust R805 to obtain V1 +0.1/+0.1, −0.05V (with AFS ON).
Since this adjustment is affected by the circuit's temperature drift perform a heat-run for more than 2 minutes in the signal reception mode.

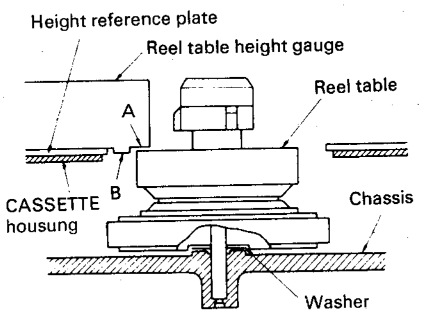
MECHANICAL ADJUSTMENT

1. Reel Table Height

The height of the supply and take-up reel tables should be the same, with ±0.2mm tolerance. Reel table heights are adjusted by changing the number of washers under each table – See "Disassembly".

Check the heights of reel tables by installing the Height Reference Plate and the Reel Table Height Gauge as shown in Figure and adjust so that the reel tables comes between A and B.

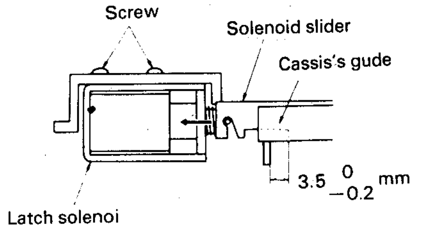
Two sizes of washers are available; 0.25mm and 0.5mm. These should be used in combination to achieve the same reference height for both reel tables.



Height reference plate
Reel table height gauge
Reel table
A
B
CASSETTE housung
Chassis
Washer

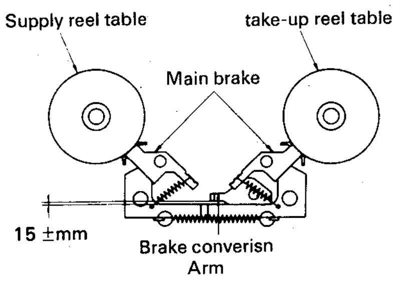
2. Latch Solenoid Position

1) Adjust two (2) screws holding the latch solenoid so that the clearance between the solenoid slider and the chassis guide groove is $3.5^{\,0}_{-0.2}$mm when the latch solenoid is ON (the plunger moves in the direction of the arrow).



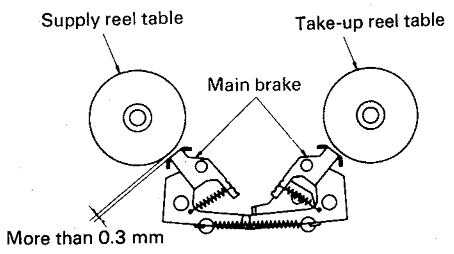
Screw
Solenoid slider
Cassis's gude
3.5 0 −0.2 mm
Latch solenoi

2) Check that the clearance between the brake conversion arm and the main brake arm is 1.5 ±0.3mm at the time when the main brake is compressed against the supply and take-up reel tables.



Supply reel table
take-up reel table
Main brake
15 ±mm
Brake converisn Arm

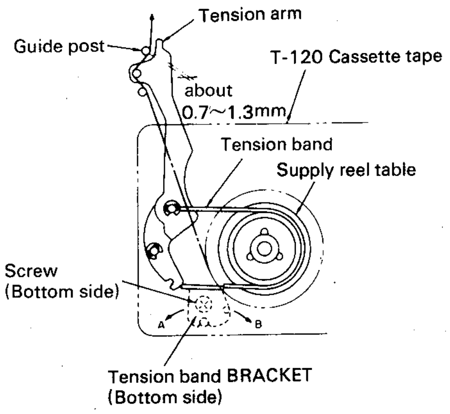
3) Check that the clearance between the main brake and the supply and take-up reel tables is more than 0.3mm when the latch solenoid is OFF.



Supply reel table
Take-up reel table
Main brake
More than 0.3 mm

3. Tension pole position

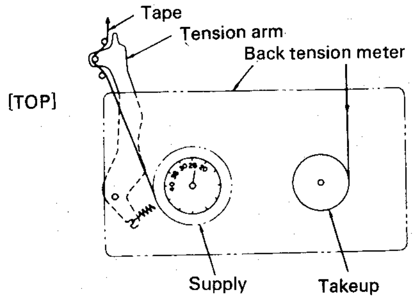
1) Insert cassette tape T120 and completely rewind the tape before setting to the PLAY mode.
2) Move the tension band bracket in directions A and B to adjust so that the clearance between the tension arm and guide post is 0.7 ~ 1.3mm after loading is complete
3) Check back-tension after adjustment is complete.



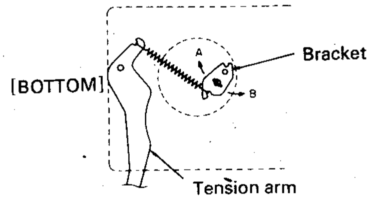
Tension arm
Guide post
T-120 Cassette tape
about 0.7~1.3mm
Tension band
Supply reel table
Screw (Bottom side)
A
B
Tension band BRACKET (Bottom side)

4. Checking the back-tension

1) Set the back-tension meter.
2) Check that the back-tension is 27 ~ 43 gr•cm.
3) When the back-tension is not 27 ~ 43 gr/cm, move the bracket which fixes the back-tension, spring in direction A or B to adjust it.



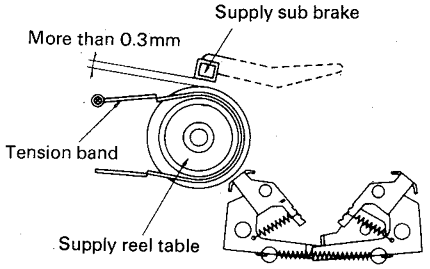
Tape
Tension arm
Back tension meter
[TOP]
Supply
Takeup



[BOTTOM]
A
B
Bracket
Tension arm

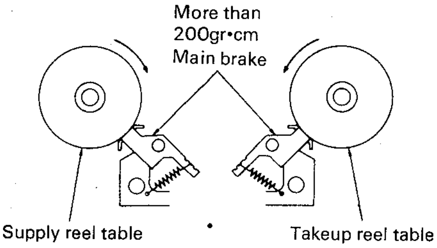
5. Checking the supply sub. brake position

Check that the clearance between the supply reel table and the supply sub. brake is more than 0.3mm in PLAY, REC, REW modes.


Supply sub brake
More than 0.3mm
Tension band
Supply reel table

6. Main brake torque

1) Apply the torque gauge to the supply/take-up reel tables in the STOP mode, turn them in the direction of the arrows to check that the torque is more than 200gr·cm.


More than
200gr•cm
Main brake
Supply reel table
Takeup reel table

7. Slack removal torque

Press the STOP button in the PLAY mode to enter the UNLOADING mode. Check that the torque gauge applied to the supply reel table shows 100 ~ 200gr·cm at that time.

NOTE: 100 ~ 200gr·cm is a reference value.

8. Rewind torque

Set to the REWIND mode. Check that the torque gauge applied to the supply reel table shows more than 360gr•cm.

9. Take-up torque

Set to the PLAY mode. Check that the torque gauge applied to the take-up reel table shows 100 ~ 200gr·cm.

NOTE: 100 ~ 200gr·cm is a reference value.

10. Fast-forward torque

Set to "F. Forward" mode. Check that the torque gauge applied to the take-up reel table shows more than 360gr•cm.

11. Supply reel table back-tension

Set to the "F. Forward" mode. Check that the torque gauge applied to the supply reel table shows 4 ~ 15gr·cm.

NOTE: 4 ~ 15gr·cm is a reference value.

12. Take-up reel table back-tension

Set to the REW mode. Check that the torque gauge applied to the take-up reel table shows 4 ~ 15 gr·cm.

NOTE: 4 ~ 15gr·cm is a reference value.

13. Take-up reel table back-tension in Loading, Unloading, Rec/Pause modes

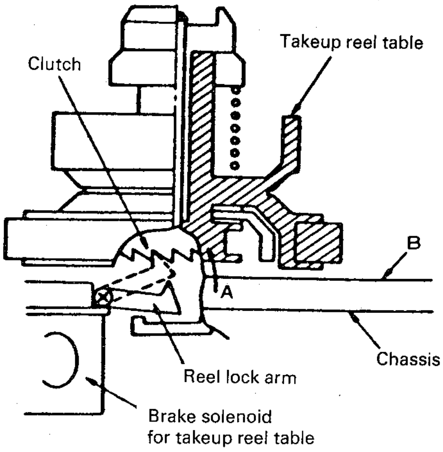
Check that the torque gauge applied to the take-up reel table shows 200 ~ 370gr·cm in the above modes.

NOTE: 200~370gr·cm is a reference value.

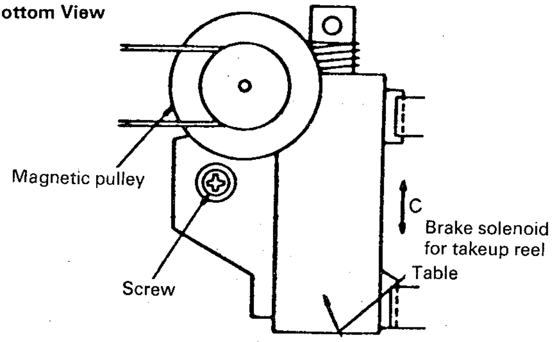
14. Reel Lock Arm Adjustment

Loosen the screw holding the reel lock arm. Move the arm until it engages the take-up clutch assembly with brake solenoid disengaged.

Side View

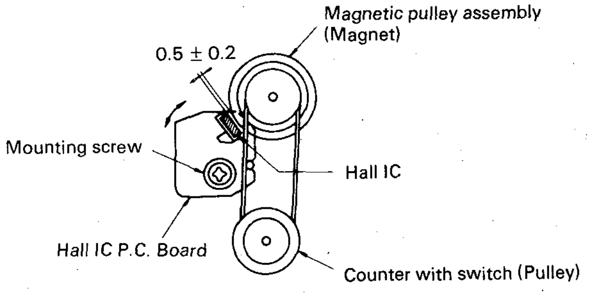

Clutch
Takeup reel table
B
A
Chassis
Reel lock arm
Brake solenoid
for takeup reel table

Bottom View


Magnetic pulley
Screw
C
Brake solenoid
for takeup reel
Table

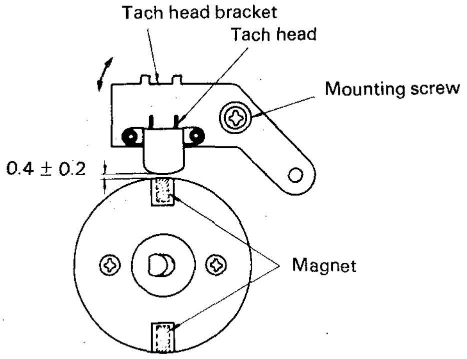
15. Adjusting the position of the take-up reel table stop detector Hall IC

Loosen the fixing screw to adjust in the direction of the arrow so that the clearance between the Hall IC and magnetic pulley assembly is 0.5 ±0.2mm.


Magnetic pulley assembly
(Magnet)
0.5 ± 0.2
Mounting screw
Hall IC
Hall IC P.C. Board
Counter with switch (Pulley)

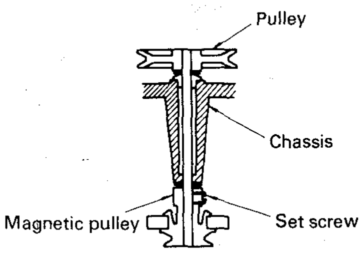
16. Adjusting the DD cylinder Tach head

Loosen the screw to adjust in the direction of the arrow so that the clearance between the Tach head and the magnet plate is 0.4 ±0.2mm (adjust 2 magnets).


Tach head bracket
Tach head
Mounting screw
0.4 ± 0.2
Magnet

17. Adjusting the counter pulley

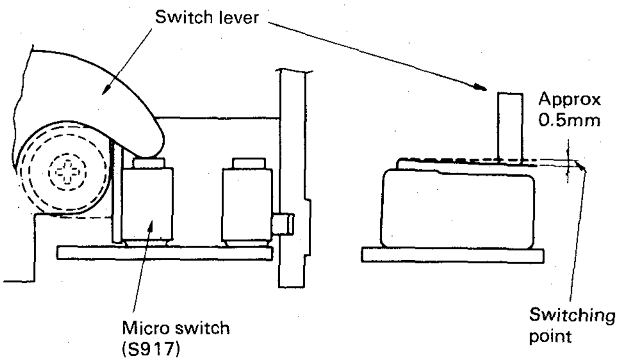
Adjust the setscrew so that clearance in the thrust direction is 0.2 ~ 0.4mm. (Use a hexagonal wrench.)


Pulley
Chassis
Magnetic pulley
Set screw

18. Adjusting the Loading/Unloading Switch

Loosen screw holding small PC board (located under loading motor). Both switches (S916—loading, S917—unloading) are mounted on this PC board. As loading starts S916 closes and S917 is open. As loading is completed S916 opens and S917 closes.

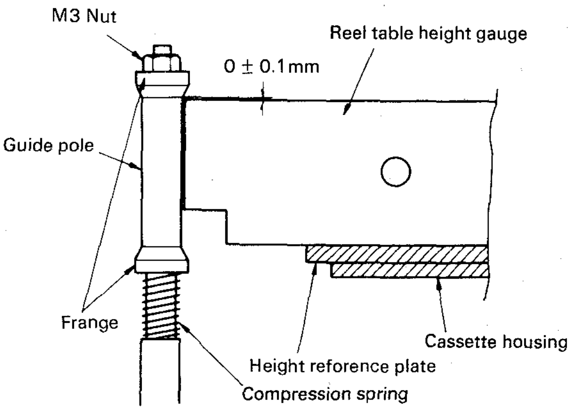
Turn the worm gear in the loading direction and confirm that the loading switch (S916) is actuated. Tighten screw.


Switch lever
Approx
0.5mm
Micro switch
(S917)
Switching
point

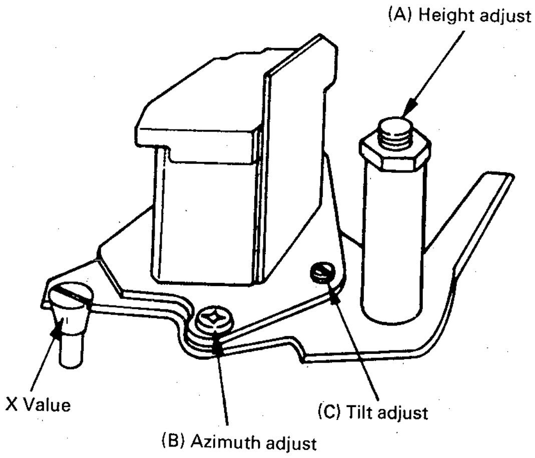
19. Adjusting the guide roller (Guide pin)

Install the height reference plate and place the reel table height jig onto it. Adjust the nut so that the clearance is 0 ±0.1.

NOTE: Electrical adjustment is required after mechanical adjustment is complete.


M3 Nut
Reel table height gauge
0 ± 0.1mm
Guide pole
Frange
Cassette housing
Height reforence plate
Compression spring

20. Adjusting the audio/control head



(Rough adjustment)

1. Tilt adjustment

1) Mount the Height reference plate to the cassette holder and bring the reel table height jig nearer to the AC head.
2) Turn the tilt adjustment screw so that the AC head surface and the reel table height jig surface are parallel.

2. Azimuth adjustment

1) Turn the tilt adjustment screw so that the side of the AC head and the side of the reel table height jig are parallel.
2) Remove the jig.

3. Height adjustment

1) Load a tape, and stop in the loaded condition.
2) Turn the height adjustment screw so that the core top of the audio erase head is a little above the tape (0.2 mm or less). The core bottom of the control head should slightly extruded from the tape at this time.

(Fine adjustment)

1. Tilt adjustment

1) Play back 6 kHz audio signal of the alignment tape.
2) Connect the oscilloscope to the audio output terminal.

2. Azimuth adjustment

1) Adjust the azimuth adjustment screw to maximize the audio output of 6 kHz signal.

3. Height adjustment

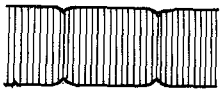
1) Adjust the height adjustment screw to maximize the audio output.

4. X value adjustment

Adjust the right/left motion of the A/C head base plate using the X screw so that the output of the FM envelope waveform is a maximum, with the tracking volume control set at the click position.

21. Tape travel

1. General check items

Item	Assessment	Tools & meters
Back-tension value	27～43g/cm (with set horizontal)	Back-tension cassette
Tension pole position	a. Chassis groove b. Tension pole	Check by eye
Supply guide pin Take-up guide pin	Tape slides along lower Flange without curling or crease	Check by eye
Inclined guide Guide roller	No conspicuous curl or crease No adherence of dust to tape	Check by eye
Tape	No conspicuous distortion variation of tape	Check by eye
Impedance roller	Roller should rotate smoothly	Check by eye
Envelope	No conspicuous fluctuation No conspicuous deformation	Alignment cassette Oscilloscope (TP308 CN501 ① pin
Flatness	○ It is desired that max envelope/min. envelope ratio is more than 60% (worst position in tracking adjustment range)	Envelope waveform (TP205) (TP201-Trigger)
Fluctuation	○ Variation width of envelope is desired to be less than 29%	
X value	○ Envelope is at max. or at a value more than 80% of max. value at the tracking knob click position	

2. Adjustment

Mainly adjust the sections shown below when re-installing or replacing parts or when there is any problem in the checks specified in item 2.

a. When replacing the head cylinder ass'y

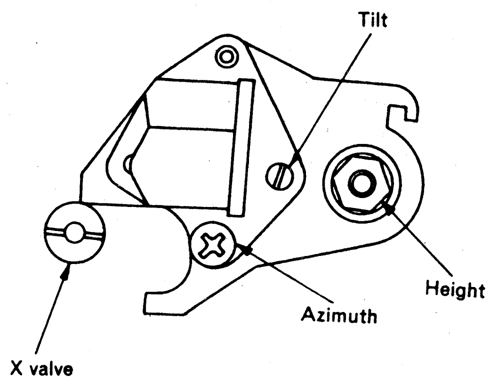
	Judgement	Jigs and Tools
o Guide roller height o Inclined guide oscillation angle	o No crease, curl of tape o Check flatness of envelope fluctuation	o Hexagonal wrench o + screwdrives o − screwdrives

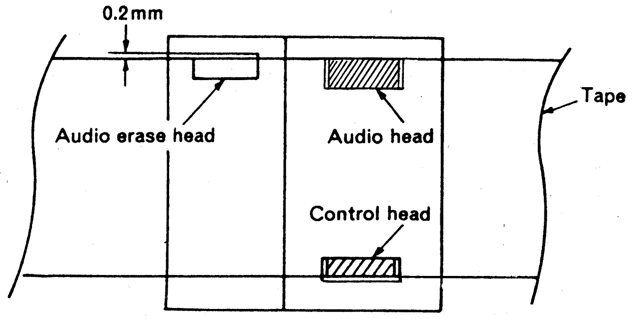
Check the following adjustment.

1. Page 16 item No. 12 Head switching point.
2. Page 17 item No. 14 Tracking preset.
3. Page 33 item No. 4 × value.
4. Page 19 item No. 4 Record chroma level.
5. Page 20 item No. 6 Record luminance level.

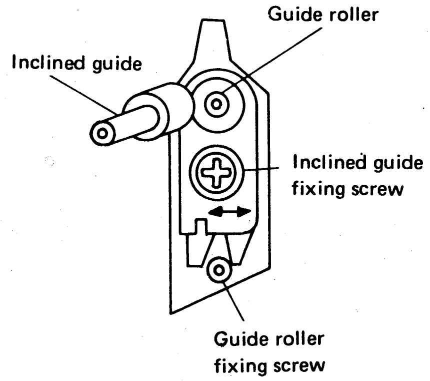
b. When replacing the A/C head ass'y

	Judgement	Jigs and Tools
o A/C head hight (Page 33)	o Audio or control track width	o Level meter
o A/C head azimuth (Page 33)	o Audio playback level maximum (Page 22)	o Alignment cassette
o A/C head tilt (Page 33)	o No slack at top/bottom tape	o Oscilloscope
	No conspicuous fluctuation of audio level (Less than 2dB)	o + screwdriver
		o − screwdriver
		o Hexagonal wrench


Tilt
Height
Azimuth
X valve


0.2mm
Audio erase head
Audio head
Control head
Tape

c. When replacing guide roller & inclined guide (Same as in a).


Guide roller
Inclined guide
Inclined guide fixing screw
Guide roller fixing screw

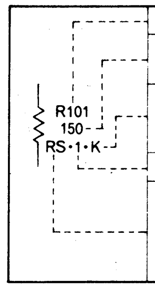
d. When replacing guide post

	Judgement	Jigs and Tools
o Height of the replacement guide section	o No crease, curl of tape o No envelope fluctuation	o Nut driver o Oscilloscope

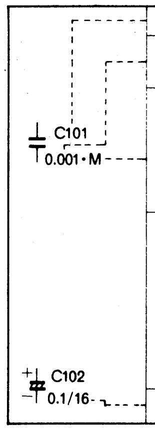
DIAGRAMS

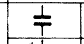
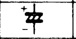
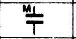
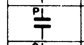
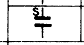
Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
   (   ) are shown in recording condition.
2. Nomenclature of Resistors and Capacitors.



Circuit No.	
Value	No indicated Ω(Ohm) M : 1000 kΩ
Tolerance	No indicated ±5% K : ±10% M : ±20%
Wattage	No indicated ¼W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film



Circuit No.		
Value	No indicated μF P : PF	
Tolerance	No indicated ±10% J : ± 5% M : ±20% Z : +80%, −20% D : ±0.5pF C : ±0.25pF	
Sort		Ceramic
		Electrolitic
		Mylar
		Polyester
		Styrol
Voltage	No indicated 50WV	

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with *, use specified ones stated on parts list since required temperature characteristics.

Cautions on use of MOS IC

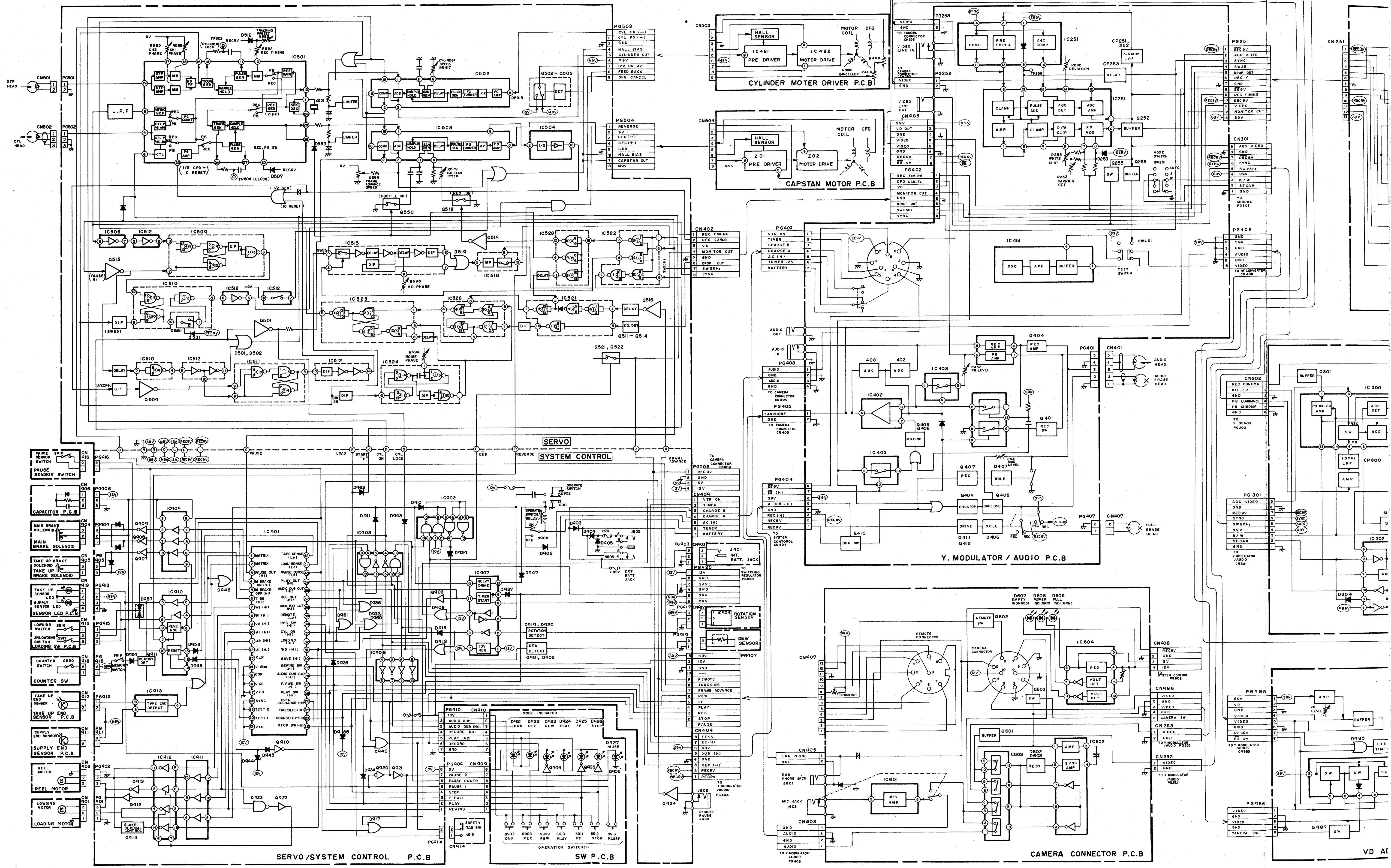
1. The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
2. High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
3. The human body, clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so a workers should be grounded.
4. Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

SAFETY PRECAUTION

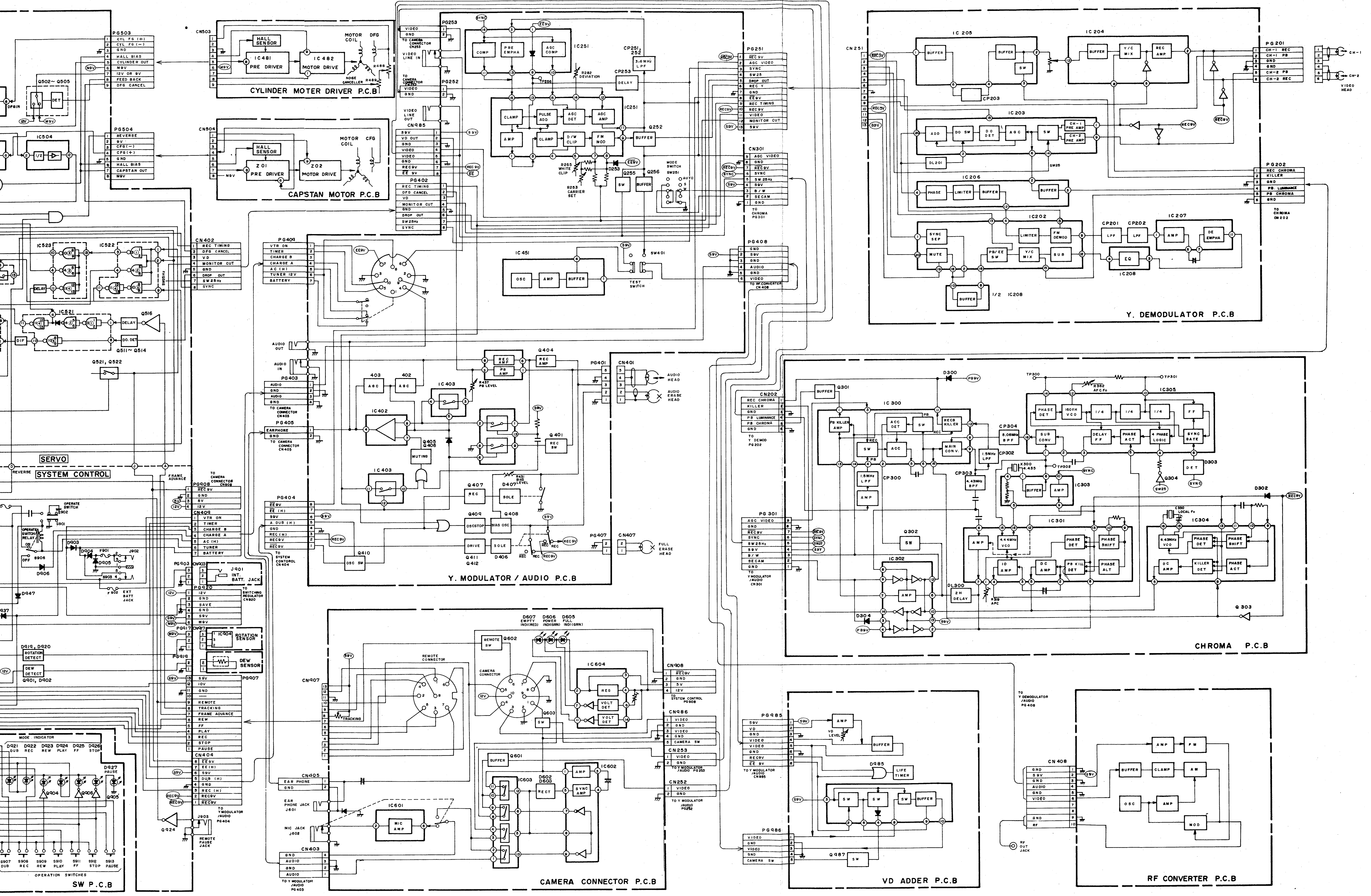
The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers.
   Critical parts are marked with ⚠ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

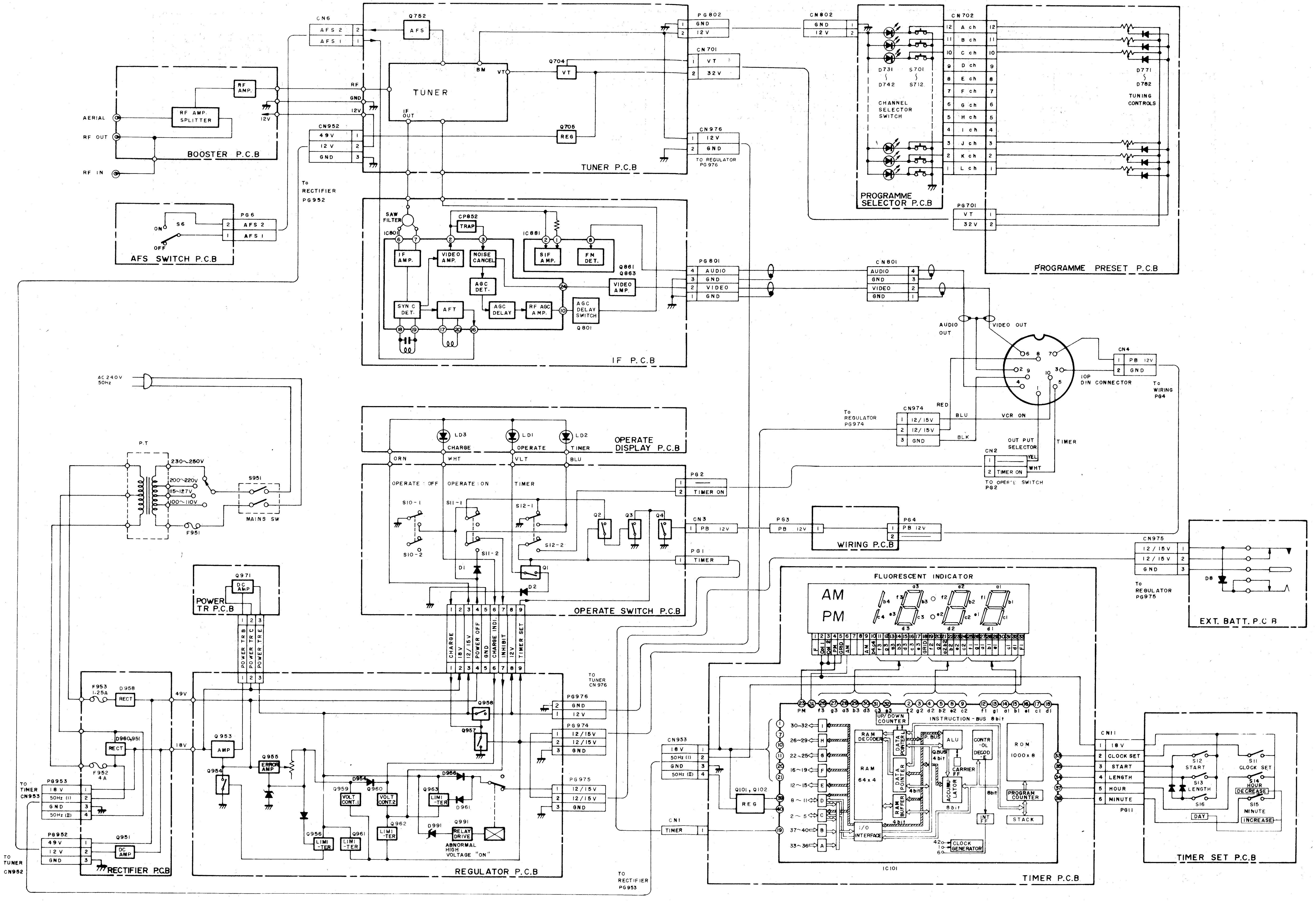
OVERALL BLOCK DIAGRAM — DECK



CN501
DTP HEAD
CN502
CTL HEAD
PG501
PG502
L.P.F
IC501
IC502
IC503
IC504
LIMITER
X501
Q502 ~ Q505
DET
PG503
CYL FG (+)
CYL FG (−)
GND
HALL BIAS
CYLINDER OUT
M9V
12V OR 9V
FEED BACK
DFG CANCEL
PG504
REVERSE
9V
CFG (−)
CFG (+)
GND
HALL BIAS
CAPSTAN OUT
M9V
CYLINDER SPEED R667
R679 CAPSTAN SPEED
R589 FRAME ADVANCE SPEED
TRACKING PRESET R651
REC. TIMING
TP502 (CYLINDER LOCK)
TP504 (CLOCK)
D507
D512
D583
(PBSTILL ON)
Q550
(REC ON)
Q518
Q519
IC506
IC512
IC509
Q515
PAUSE Hi
IC510
IC515
IC516
IC522
IC523
IC525
IC526
IC521
IC524
IC511
D519
Q516
R596 VD. PHASE
R694 NOISE PHASE
Q501
D501, D502
D581
Q531
Q511 ~ Q514
Q521, Q522
Q509
(SW25)
(1/2 CFG)
(IC RESET)
CN402
REC TIMING
DFG CANCEL
VD
MONITOR CUT
GND
DROP OUT
SW 25Hz
SYNC
SERVO
SYSTEM CONTROL
PAUSE
LOAD
START "H"
CYL ON
CYL LOCK
EEH
REVERSE
FRAME ADVANCE
PAUSE SENSOR SWITCH
CN916
PAUSE SENSOR SWITCH
CN906
CAPACITOR P.C.B
CN904
MAIN BRAKE SOLENOID
CN905
TAKE UP BRAKE SOLENOID
CN913
TAKE UP SENSOR LED
SUPPLY SENSOR LED
SENSOR LED P.C.B
CN915
LOADING SWITCH
UNLOADING SWITCH
LOADING SW P.C.B
CN918
COUNTER SWITCH
COUNTER SW
CN912
TAKE UP END SENSOR
TAKE UP END SENSOR P.C.B
CN911
SUPPLY END SENSOR
SUPPLY END SENSOR P.C.B
CN902
REEL MOTOR
CN901
LOADING MOTOR
PG916
PG906
PG904
PG905
PG913
PG915
PG918
PG912
PG902
PG901
IC909
IC910
IC913
TAPE END DETECT
IC912
IC911
Q913
Q912
Q914
SLAKE REMOVAL CONTROL
IC901
IC902
IC903
IC907
IC908
RELAY DRIVE
TIMER START
10V REG
ROTATION DETECT
DEW DETECT
D919, D920
Q901, Q902
MEMORY DET
MEMORY SWITCH
REVERSE
RESET
OPERATE SWITCH
OPERATE SWITCH RELAY
S902
S906
F901
J902
EXT BATT JACK
MATRIX
PAUSE OUT (Hi)
M BRAKE ON (Hi)
T BRAKE OFF (Hi)
TAPE SENSE (Lo)
LOAD SENSE (Lo)
PAUSE SENSE
PLAY OUT (Hi)
AUDIO DUB OUT (Hi)
REC OUT (Hi)
MONITOR CUT (Hi)
REMOTE (Lo)
REC SW (Hi)
CYL ON (Hi)
LOADING (Hi)
W3 (Hi)
SAVE (Hi)
REWIND SW (Hi)
AUDIO DUB SW (Hi)
F.FWD SW (Hi)
PLAY SW (Hi)
OVER DISCHARGE (Hi)
TROUBLES (Hi)
SOURCE (EXT Hi)
STOP SW (Hi)
CLK
COR
VDD
SYNC
TEST 2
TEST 1
Vcc
PG910 CN910
IOV
AUDIO DUB
AUDIO DUB INDI
RECORD INDI
PLAY INDI
RECORD
GND
PG909 CN909
5V
PAUSE 2
PAUSE POWER
PAUSE 1
STOP
F.FWD
PLAY
REWIND
MODE INDICATOR
D921 DUB
D922 REC
D923 REW
D924 PLAY
D925 FF
D926 STOP
D927 PAUSE
S907 DUB
S908 REC
S909 REW
S910 PLAY
S911 FF
S912 STOP
S913 PAUSE
OPERATION SWITCHES
SAFETY TAB SW
S918
CN914
PG914
Q920
Q921
Q922
Q923
Q924
SERVO/SYSTEM CONTROL P.C.B
SW P.C.B
PG908
REC9V
GND
5V
12V
CN409
VTR ON
TIMER
CHARGE B
CHARGE A
AC (H)
TUNER
BATTERY
CN903
J901
INT. BATT. JACK
PG920
TO SWITCHING REGULATOR CN920
SAVE
S9V
M9V
PG917 CN917
IC904
ROTATION SENSOR
PG919
DEW SENSOR
PG907
REMOTE
TRACKING
FRAME ADVANCE
REW
FF
PLAY
REC
STOP
PAUSE
CN404
EE9V
EE (H)
S9V
DUB (H)
GND
REC (H)
REC9V
J903
REMOTE PAUSE JACK
TO Y MODULATOR /AUDIO PG404
TO CAMERA CONNECTOR CN908
CN503
HALL SENSOR
IC481 PRE DRIVER
IC482 MOTOR DRIVE
MOTOR COIL
DFG
NOISE CANCELLER
CYLINDER MOTER DRIVER P.C.B
CN504
HALL SENSOR
Z01 PRE DRIVER
Z02 MOTOR DRIVE
MOTOR COIL
CFG
CAPSTAN MOTOR P.C.B
PG253
VIDEO
GND
TO CAMERA CONNECTOR CN253
VIDEO LINE IN
PG252
VIDEO LINE OUT
CN985
S9V
VD OUT
MONITOR CUT
PG402
REC TIMING
DFG CANCEL
DROP OUT
SW25Hz
SYNC
IC251
COMP
PRE EMPHA
AGC COMP
CLAMP
PULSE ADD
AGC DET
AGC AMP
AMP
D/W CLIP
FM MOD
R262 DEVIATION
R263 WHITE CLIP
R253 CARRIER SET
D253
Q255
Q256
CP251 252
3.6MHz LPF
CP253
DELAY
Q252
BUFFER
MODE SWITCH SW251
AUTO
PG251
REC9V
AGC VIDEO
SYNC
SW25
DROP OUT
REC Y
GND
EE9V
REC TIMING
MONITOR CUT
CN301
REC9V
SW 25Hz
S9V
B/W
SECAM
TO CHROMA PG301
CN251
IC451
OSC
AMP
BUFFER
SW401
TEST SWITCH
PG408
TO RF CONVERTER CN408
PG409
PG403
AUDIO OUT
AUDIO IN
TO CAMERA CONNECTOR CN403
PG405
EARPHONE
TO CAMERA CONNECTOR CN405
PG404
A. DUB (H)
TO SYSTEM CONTROL CN404
403
402
AGC
IC403
IC402
R437 PB LEVEL
Q405 Q406
MUTING
Q401
Q404
REC AMP
PB AMP
PG401
CN401
AUDIO HEAD
AUDIO ERASE HEAD
Q407
R431 BIAS LEVEL
D407
SOLE
Q409
OSCSTOP
BIAS OSC
Q408
Q410
OSC SW
DRIVE
Q411
Q412
D406
PG407
CN407
FULL ERASE HEAD
Y. MODULATOR / AUDIO P.C.B
D607 EMPTY INDI (RED)
D606 POWER INDI (GRN)
D605 FULL INDI (GRN)
REMOTE SW
Q602
REMOTE CONNECTOR
CAMERA CONNECTOR
IC604
REG
VOLT DET
Q603
Q601
IC603
D602 D603
RECT
SYNC AMP
IC602
IC601
MIC AMP
EAR PHONE JACK J601
MIC JACK J602
CN405
EAR PHONE
CN403
TO Y MODULATOR /AUDIO PG403
CN908
TO SYSTEM CONTROL PG908
CN986
CAMERA SW
CN253
TO Y MODULATOR /AUDIO PG253
CN252
TO Y MODULATOR /AUDIO PG252
CAMERA CONNECTOR P.C.B
CN202
REC CHROMA
KILLER
PB LUMINANCE
PB CHROMA
TO Y DEMOD PG202
Q301
PB KILLER AMP
IC300
ACC DET
ACC
1.5MHz LPF
CP300
PG301
TO Y MODULATOR /AUDIO CN301
IC302
D304
PG985
VD LEVEL
BUFFER
D985
PG986
Q987
VD A

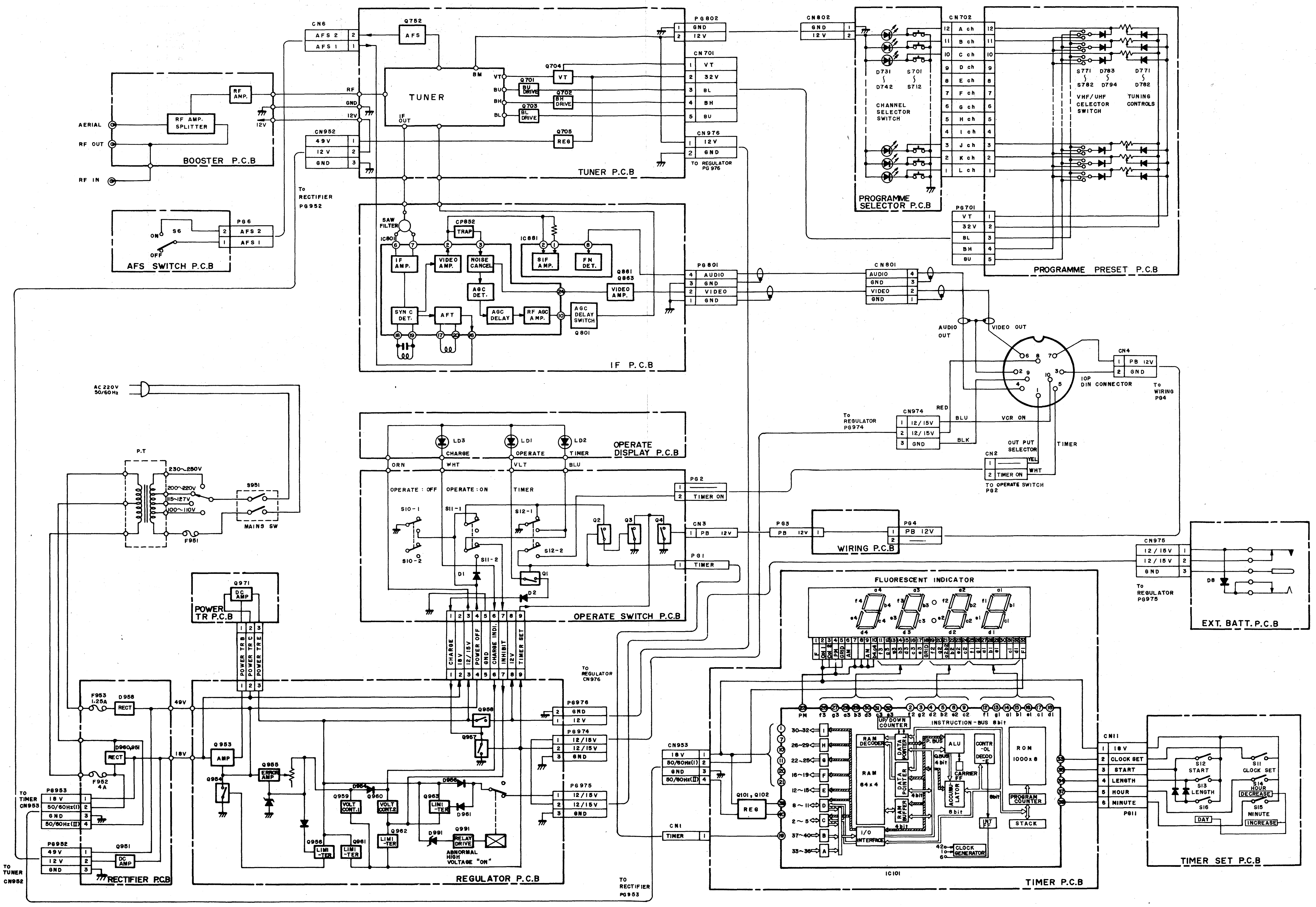

CYLINDER MOTER DRIVER P.C.B
CAPSTAN MOTOR P.C.B
SERVO
SYSTEM CONTROL
SW P.C.B
OPERATION SWITCHES
MODE INDICATOR
Y. MODULATOR / AUDIO P.C.B
CAMERA CONNECTOR P.C.B
Y. DEMODULATOR P.C.B
CHROMA P.C.B
VD ADDER P.C.B
RF CONVERTER P.C.B
PG503
PG504
CN503
CN504
IC481
IC482
HALL SENSOR
PRE DRIVER
MOTOR DRIVE
Z01
Z02
MOTOR COIL
DFG
CFG
IC504
IC521
IC522
IC523
Q502~Q505
Q511~Q514
Q516
Q521, Q522
CN402
PG408
PG409
CN409
PG403
PG405
PG404
PG401
CN401
PG407
CN407
IC251
IC402
IC403
IC451
Q401
Q404
Q407
Q408
Q409
Q410
Q411
Q412
D406
D407
PG251
PG252
PG253
CN301
CN985
PG402
CN251
IC203
IC204
IC205
IC206
IC202
IC207
IC208
PG201
PG202
CP201
CP202
CP203
DL201
CN202
PG301
IC300
IC301
IC302
IC303
IC304
IC305
DL300
Q301
Q302
Q303
Q304
D300
D302
D303
D304
CN407
CN408
CN403
CN405
CN486
CN253
CN252
IC601
IC602
IC603
IC604
Q601
Q602
Q603
D605
D606
D607
PG985
PG986
Q987
D985
LIFE TIMER
CN408
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
VIDEO HEAD
CH-1
CH-2
REMOTE CONNECTOR
CAMERA CONNECTOR
EAR PHONE JACK J601
MIC JACK J602
RF OUT JACK
ROTATION SENSOR
DEW SENSOR
J901 INT. BATT. JACK
EXT BATT JACK
REMOTE PAUSE JACK
S907 DUB
S908 REC
S909 REW
S910 PLAY
S911 FF
S912 STOP
S913 PAUSE

OVERALL BLOCK DIAGRAM — TUNER (For the UK model)



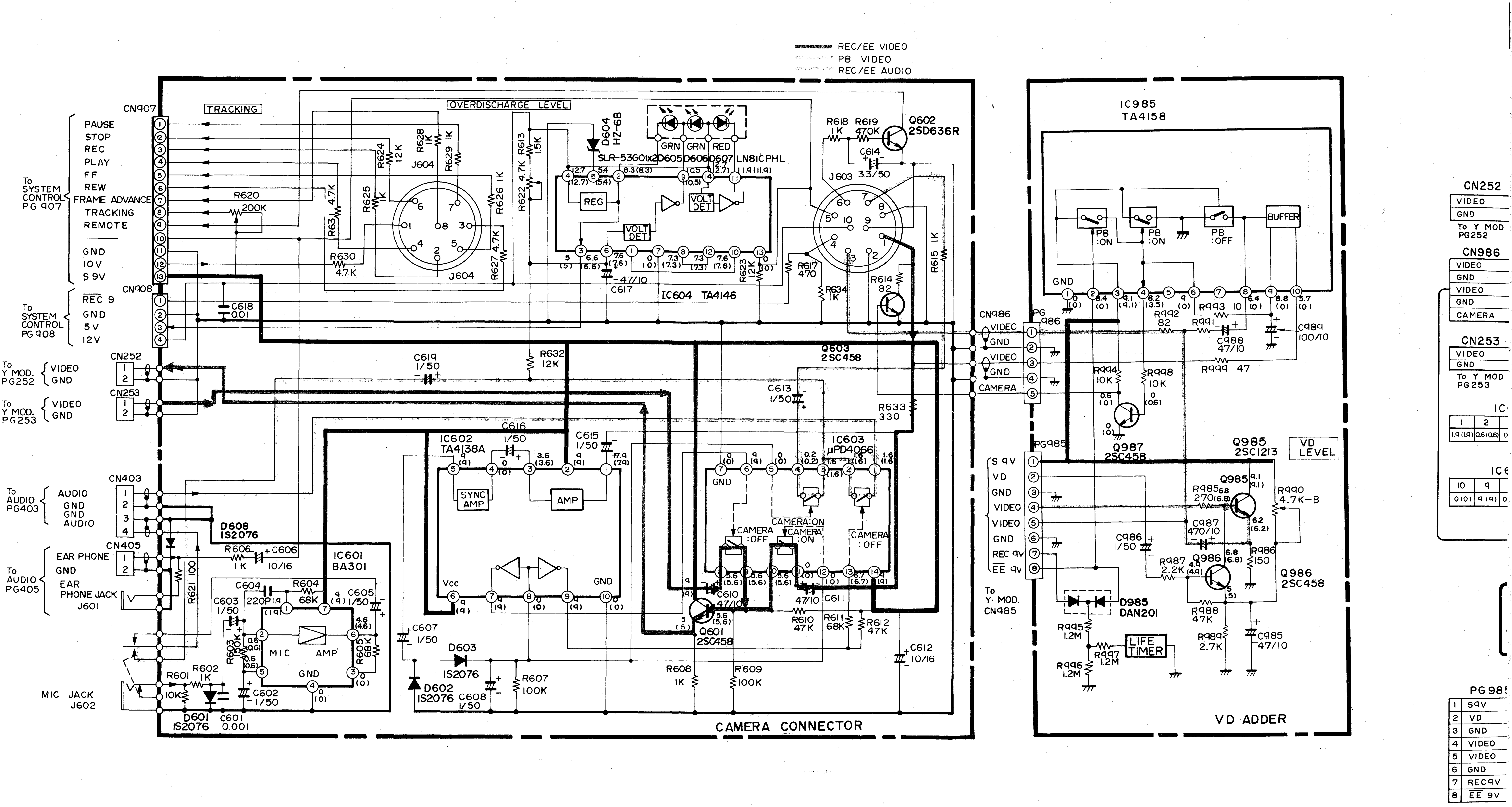
AERIAL
RF OUT
RF IN
RF AMP. SPLITTER
RF AMP.
BOOSTER P.C.B
AFS SWITCH P.C.B
S6
ON
OFF
PG6
AFS 2
AFS 1
CN6
Q752
AFS
TUNER
BM
VT
IF OUT
RF
GND
12V
CN952
49V
12V
GND
Q704
Q705
REG
PG802
CN701
32V
CN976
TO REGULATOR PG976
TUNER P.C.B
To RECTIFIER PG952
SAW FILTER
IC801
CP852
TRAP
IF AMP.
VIDEO AMP.
NOISE CANCEL
AGC DET.
SYNC DET.
AFT
AGC DELAY
RF AGC AMP.
IC881
SIF AMP.
FM DET.
Q861 Q863
VIDEO AMP.
AGC DELAY SWITCH
Q801
IF P.C.B
PG801
AUDIO
VIDEO
CN802
CN702
A ch
B ch
C ch
D ch
E ch
F ch
G ch
H ch
I ch
J ch
K ch
L ch
D731 ~ D742
S701 ~ S712
CHANNEL SELECTOR SWITCH
PROGRAMME SELECTOR P.C.B
D771 ~ D782
TUNING CONTROLS
PG701
PROGRAMME PRESET P.C.B
CN801
AUDIO OUT
VIDEO OUT
CN4
PB 12V
10P DIN CONNECTOR
To WIRING PG4
To REGULATOR PG974
CN974
12/15V
RED
BLU
BLK
VCR ON
OUT PUT SELECTOR
TIMER
CN2
YEL
WHT
TIMER ON
TO OPER'L SWITCH PG2
AC 240V 50Hz
P.T
230~250V
200~220V
115~127V
100~110V
S951
MAINS SW
F951
LD3
LD1
LD2
CHARGE
OPERATE
TIMER
OPERATE DISPLAY P.C.B
ORN
WHT
VLT
BLU
OPERATE : OFF
OPERATE : ON
S10-1
S10-2
S11-1
S11-2
S12-1
S12-2
Q2
Q3
Q4
Q1
D1
D2
PG2
PG1
CN3
OPERATE SWITCH P.C.B
PG3
PG4
WIRING P.C.B
CN975
12/15V
EXT. BATT. P.C.B
To REGULATOR PG975
D8
Q971
DC AMP
POWER TR P.C.B
POWER TR B
POWER TR C
POWER TR E
CHARGE
18V
12/15V
POWER OFF
GND
CHARGE INDI.
INHIBIT
12V
TIMER SET
F953 1.25A
D958
RECT
49V
D960, 951
F952 4A
18V
Q953
AMP
Q954
Q955
ERROR AMP
Q958
Q957
D954
Q959
VOLT CONT.1
Q960
VOLT CONT.2
Q963
LIMI-TER
D966
D961
Q962
D991
Q991
RELAY DRIVE
ABNORMAL HIGH VOLTAGE "ON"
Q956
Q961
REGULATOR P.C.B
TO TUNER CN976
PG976
PG974
PG975
To TIMER CN953
PG953
50Hz (I)
50Hz (II)
To TUNER CN952
PG952
Q951
RECTIFIER P.C.B
TO RECTIFIER PG953
FLUORESCENT INDICATOR
AM
PM
CN953
Q101, Q102
CN1
UP/DOWN COUNTER
RAM DECODER
RAM 64×4
DATA POINTER
DATA POINTER
RAM BUFFER
P. BUS
ALU
CONTROL DECODER
CARRIER FF
ACCUMULATOR
ROM 1000×8
PROGRAM COUNTER
STACK
INT FF
I/O INTERFACE
CLOCK GENERATOR
INSTRUCTION-BUS 8bit
IC101
TIMER P.C.B
CN11
PG11
CLOCK SET
START
LENGTH
HOUR
MINUTE
S12 START
S11 CLOCK SET
S13 LENGTH
S14 HOUR DECREASE
S15 MINUTE INCREASE
S16 DAY
TIMER SET P.C.B

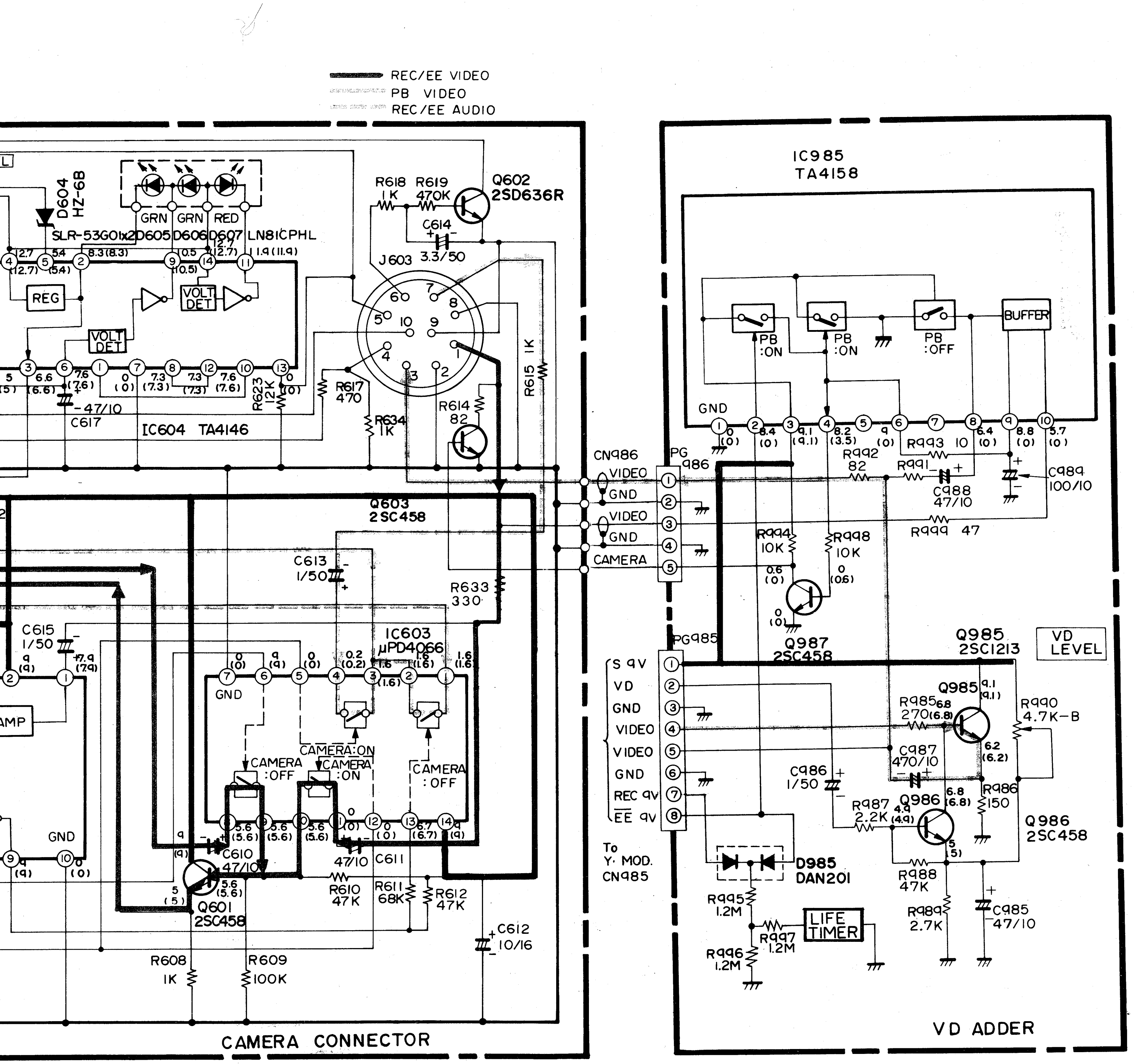
OVERALL BLOCK DIAGRAM — TUNER (Except for the UK model)

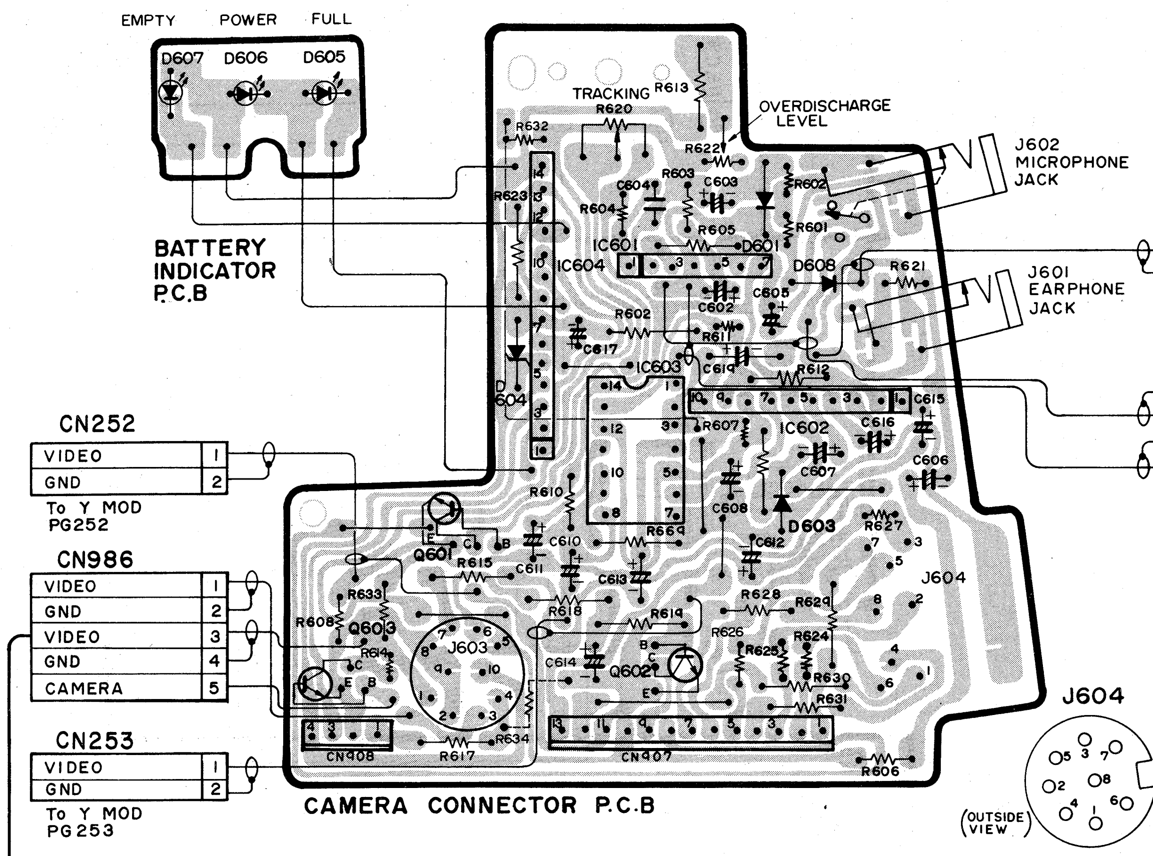


BOOSTER P.C.B
AERIAL
RF OUT
RF IN
RF AMP. SPLITTER
RF AMP.
AFS SWITCH P.C.B
S6
ON
OFF
PG6
AFS 2
AFS 1
CN6
Q752
AFS
TUNER
TUNER P.C.B
Q701 BU DRIVE
Q702 BH DRIVE
Q703 BL DRIVE
Q704 VT
Q705 REG
CN952
49V
12V
GND
To RECTIFIER PG952
PG802
CN701
VT
32V
BL
BH
BU
CN976
TO REGULATOR PG976
IF P.C.B
SAW FILTER
IC801
IF AMP.
VIDEO AMP.
NOISE CANCEL
CP852 TRAP
AGC DET.
SYNC DET.
AFT
AGC DELAY
RF AGC AMP.
AGC DELAY SWITCH
Q801
IC881
SIF AMP.
FM DET.
Q861 Q863
VIDEO AMP.
PG801
AUDIO
GND
VIDEO
CN801
AUDIO OUT
VIDEO OUT
IOP DIN CONNECTOR
CN4
PB 12V
To WIRING PG4
CN974
12/15V
To REGULATOR PG974
RED
BLU
BLK
VCR ON
TIMER
OUT PUT SELECTOR
CN2
TIMER ON
YEL
WHT
TO OPERATE SWITCH PG2
CN802
PROGRAMME SELECTOR P.C.B
D731 ~ D742
S701 ~ S712
CHANNEL SELECTOR SWITCH
CN702
A ch
B ch
C ch
D ch
E ch
F ch
G ch
H ch
I ch
J ch
K ch
L ch
S771 ~ S782
D783 ~ D794
D771 ~ D782
VHF/UHF SELECTOR SWITCH
TUNING CONTROLS
PG701
PROGRAMME PRESET P.C.B
AC 220V 50/60Hz
P.T
230~250V
200~220V
115~127V
100~110V
S951
MAINS SW
F951
OPERATE DISPLAY P.C.B
LD3 CHARGE
LD1 OPERATE
LD2 TIMER
ORN
WHT
VLT
BLU
OPERATE : OFF
OPERATE : ON
TIMER
S10-1
S10-2
S11-1
S11-2
S12-1
S12-2
Q1
Q2
Q3
Q4
D1
D2
PG2
TIMER ON
CN3
PB 12V
PG1
TIMER
OPERATE SWITCH P.C.B
CHARGE
18V
12/15V
POWER OFF
GND
CHARGE INDI.
INHIBIT
12V
TIMER SET
POWER TR P.C.B
Q971 DC AMP
POWER TR B
POWER TR C
POWER TR E
PG3
PG4
WIRING P.C.B
CN975
12/15V
GND
To REGULATOR PG975
D8
EXT. BATT. P.C.B
F953 1.25A
D958 RECT
49V
D960,951 RECT
F952 4A
18V
Q953 AMP
Q954
Q955 ERROR AMP
Q956 LIMI-TER
Q957
Q958
Q959 VOLT CONT.1
Q960 VOLT CONT.2
Q961 LIMI-TER
Q962 LIMI-TER
Q963 LIMI-TER
D961
D964
D966
D991
Q991 RELAY DRIVE
ABNORMAL HIGH VOLTAGE "ON"
Q951 DC AMP
REGULATOR P.C.B
RECTIFIER P.C.B
PG953
50/60Hz(I)
50/60Hz(II)
To TIMER CN953
PG952
To TUNER CN952
PG976
PG974
PG975
To REGULATOR CN976
To RECTIFIER PG953
FLUORESCENT INDICATOR
CN953
Q101, Q102 REG
CN1 TIMER
PM
UP/DOWN COUNTER
INSTRUCTION-BUS 8bit
RAM DECODER
RAM 64×4
DATA POINTER
RAM BUFFER
P. BUS
ALU
CARRIER FF
ACCUMULATOR
CONTROL DECODER
ROM 1000×8
PROGRAM COUNTER
STACK
I/O INTERFACE
CLOCK GENERATOR
IC101
TIMER P.C.B
CN11
START
CLOCK SET
LENGTH
HOUR
MINUTE
P611
S11 CLOCK SET
S12 START
S13 LENGTH
S14 HOUR DECREASE
S15 MINUTE INCREASE
S16 DAY
TIMER SET P.C.B

CAMERA CONNECTOR


REC/EE VIDEO
PB VIDEO
REC/EE AUDIO
CN907
To SYSTEM CONTROL PG 907
PAUSE
STOP
REC
PLAY
FF
REW
FRAME ADVANCE
TRACKING
REMOTE
GND
10V
S 9V
CN908
To SYSTEM CONTROL PG 908
REC 9
GND
5V
12V
To Y MOD. PG252
VIDEO
GND
CN252
CN253
To Y MOD. PG253
CN403
To AUDIO PG403
AUDIO
GND
GND
AUDIO
CN405
To AUDIO PG405
EAR PHONE
GND
EAR PHONE JACK J601
MIC JACK J602
TRACKING
OVERDISCHARGE LEVEL
R620 200K
J604
D604 HZ-6B
SLR-53G01x2 D605 D606 D607 LN81CPHL
GRN GRN RED
REG
VOLT DET
IC604 TA4146
R618 1K
R619 470K
Q602 2SD636R
C614 3.3/50
J603
R617 470
R614 82
R615 1K
R634 1K
C618 0.01
C619 1/50
R632 12K
Q603 2SC458
C613 1/50
R633 330
IC602 TA4138A
C616 1/50
C615 1/50
SYNC AMP
AMP
Vcc
GND
IC603 μPD4066
CAMERA :OFF
CAMERA :ON
C610 47/10
C611 47/10
Q601 2SC458
R610 47K
R611 68K
R612 47K
C612 10/16
R608 1K
R609 100K
D608 1S2076
R606 1K
C606 10/16
IC601 BA301
C604 220P
R604 68K
C605 1/50
C603 1/50
MIC AMP
GND
R603 150K
R605 68K
R621 100
R601 10K
R602 1K
D601 1S2076
C601 0.001
C602 1/50
C607 1/50
D603 1S2076
D602 1S2076
C608 1/50
R607 100K
CAMERA CONNECTOR
CN986
PG 986
VIDEO
GND
VIDEO
GND
CAMERA
IC985 TA4158
PB :ON
PB :ON
PB :OFF
BUFFER
R993 10
R992 82
R991
C988 47/10
C989 100/10
R999 47
R994 10K
R998 10K
Q987 2SC458
Q985 2SC1213
VD LEVEL
PG985
S 9V
VD
GND
VIDEO
VIDEO
GND
REC 9V
EE 9V
To Y MOD. CN985
R985 270
C987 470/10
R990 4.7K-B
C986 1/50
R987 2.2K
Q986 2SC458
R986 150
D985 DAN201
R988 47K
R989 2.7K
C985 47/10
R995 1.2M
R997 1.2M
R996 1.2M
LIFE TIMER
VD ADDER
EMP
CN252
VIDEO
GND
To Y MOD PG252
CN986
VIDEO
GND
VIDEO
GND
CAMERA
CN253
VIDEO
GND
To Y MOD PG 253
PG985
1 S9V
2 VD
3 GND
4 VIDEO
5 VIDEO
6 GND
7 REC9V
8 EE 9V


REC/EE VIDEO
PB VIDEO
REC/EE AUDIO
D604 HZ-6B
SLR-53G01x2 D605 D606 D607 LN81CPHL
GRN GRN RED
REG
VOLT DET
IC604 TA4146
R618 1K
R619 470K
Q602 2SD636R
C614 3.3/50
J603
R614 82
R615 1K
R617 470
R634 1K
R623 2.2K
C617 47/10
Q603 2SC458
C613 1/50
R633 330
C615 1/50
IC603 μPD4066
CAMERA :OFF
CAMERA :ON
CAMERA:ON
GND
AMP
C610 47/10
Q601 2SC458
C611 47/10
R610 47K
R611 68K
R612 47K
C612 10/16
R608 1K
R609 100K
CAMERA CONNECTOR
CN986
VIDEO
GND
VIDEO
GND
CAMERA
PG986
PG985
S9V
VD
GND
VIDEO
VIDEO
GND
REC 9V
EE 9V
To Y· MOD. CN985
IC985 TA4158
PB :ON
PB :ON
PB :OFF
BUFFER
R993 10
R992 82
R991
C988 47/10
C989 100/10
R999 47
R994 10K
R998 10K
Q987 2SC458
VD LEVEL
Q985 2SC1213
R985 270
R990 4.7K-B
C987 470/10
C986 1/50
R987 2.2K
Q986 2SC458
R986 150
R988 47K
R989 2.7K
C985 47/10
D985 DAN201
R995 1.2M
R997 1.2M
R996 1.2M
LIFE TIMER
VD ADDER


EMPTY
POWER
FULL
D607
D606
D605
BATTERY INDICATOR P.C.B
TRACKING
OVERDISCHARGE LEVEL
R613
R620
R632
R622
R623
R603
C604
C603
R602
R604
R605
R601
IC601
IC604
D601
D608
R621
J602 MICROPHONE JACK
J601 EARPHONE JACK
R602
C602
C605
R611
C617
IC603
R612
D604
R607
IC602
C616
C615
C607
C606
R610
C608
D603
R627
Q601
R615
C610
C611
C613
C612
R666
R633
R608
Q603
R618
R614
R628
R629
J604
J603
C614
Q602
R626
R625
R624
R630
R631
CN908
R617
R634
CN907
R606
CAMERA CONNECTOR P.C.B
J604
(OUTSIDE VIEW)

CN252

VIDEO	1
GND	2

To Y MOD
PG252

CN986

VIDEO	1
GND	2
VIDEO	3
GND	4
CAMERA	5

CN253

VIDEO	1
GND	2

To Y MOD
PG253

CN405

1	EARPHONE
2	GND

To AUDIO
PG405

CN403

4	GND
3	AUDIO
2	GND
1	AUDIO

To AUDIO
PG403

CN907

1	PAUSE
2	STOP
3	REC
4	PLAY
5	F.F
6	REW
7	FRAME ADVANCE
8	TRACKING
9	REMOTE
10	———
11	GND
12	10V
13	S9V

To SYSTEM CONTROL
PG907

CN908

1	$\overline{\text{REC}}$ 9V
2	GND
3	5V
4	12V

To SYSTEM CONTROL
PG908

IC601

1	2	3	4	5	6	7
1.9 (1.9)	0.6 (0.6)	0 (0)	0 (0)	0.6 (0.6)	4.6 (4.6)	9 (9)

IC602

10	9	8	7	6	5	4	3	2	1
0 (0)	9 (9)	0 (0)	9 (9)	9 (9)	9 (9)	0 (0)	3.6 (3.6)	9 (9)	7.9 (7.9)

IC603

14	9 (9)	1	1.6 (1.6)
13	6.7 (6.7)	2	1.6 (1.6)
12	0 (0)	3	1.6 (1.6)
11	0 (0)	4	0.2 (0.2)
10	5.6 (5.6)	5	0 (0)
9	5.6 (5.6)	6	9 (9)
8	5.6 (5.6)	7	0 (0)

IC604

14	12.7 (12.7)	7	0 (0)
13	0 (0)	6	6.6 (6.6)
12	7.3 (7.3)	5	5.4 (5.4)
11	11.9 (11.9)	4	12.7 (12.7)
10	7.6 (7.6)	3	5 (5)
9	10.5 (10.5)	2	8.3 (8.3)
8	7.3 (7.3)	1	7.6 (7.6)

Q601

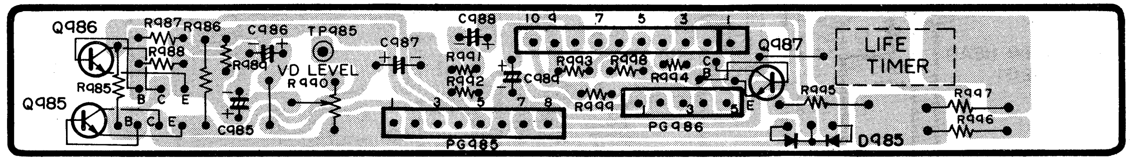
B	5.6 (5.6)
C	9 (9)
E	5 (5)

Q602

B	0 (0)
C	10 (10)
E	0 (0)

Q603

B	0 (0.6)
C	5.5 (0)
E	0 (0)


IC985
Q986
R987
R986
C986
TP985
C988
10
9
7
5
3
1
Q987
LIFE TIMER
R988
R989
VD LEVEL
R990
C987
R991
R992
C984
R993
R998
R999
R994
R995
R997
R996
Q985
R985
B
C
E
C985
PG985
PG986
D985

VD ADDER P.C.B

PG985

1	S9V
2	VD
3	GND
4	VIDEO
5	VIDEO
6	GND
7	REC9V
8	$\overline{\text{EE}}$ 9V

TO
Y MODULATOR
CN985

IC985

10	9	8	7	6	5	4	3	2	1
5.7 (0)	8.8 (0)	6.4 (0)	—	9 (0)	—	8.2 (3.5)	9.1 (9.1)	8.4 (0)	0 (0)

Q985

B	6.8 (6.8)
C	9.1 (9.1)
E	6.2 (6.2)

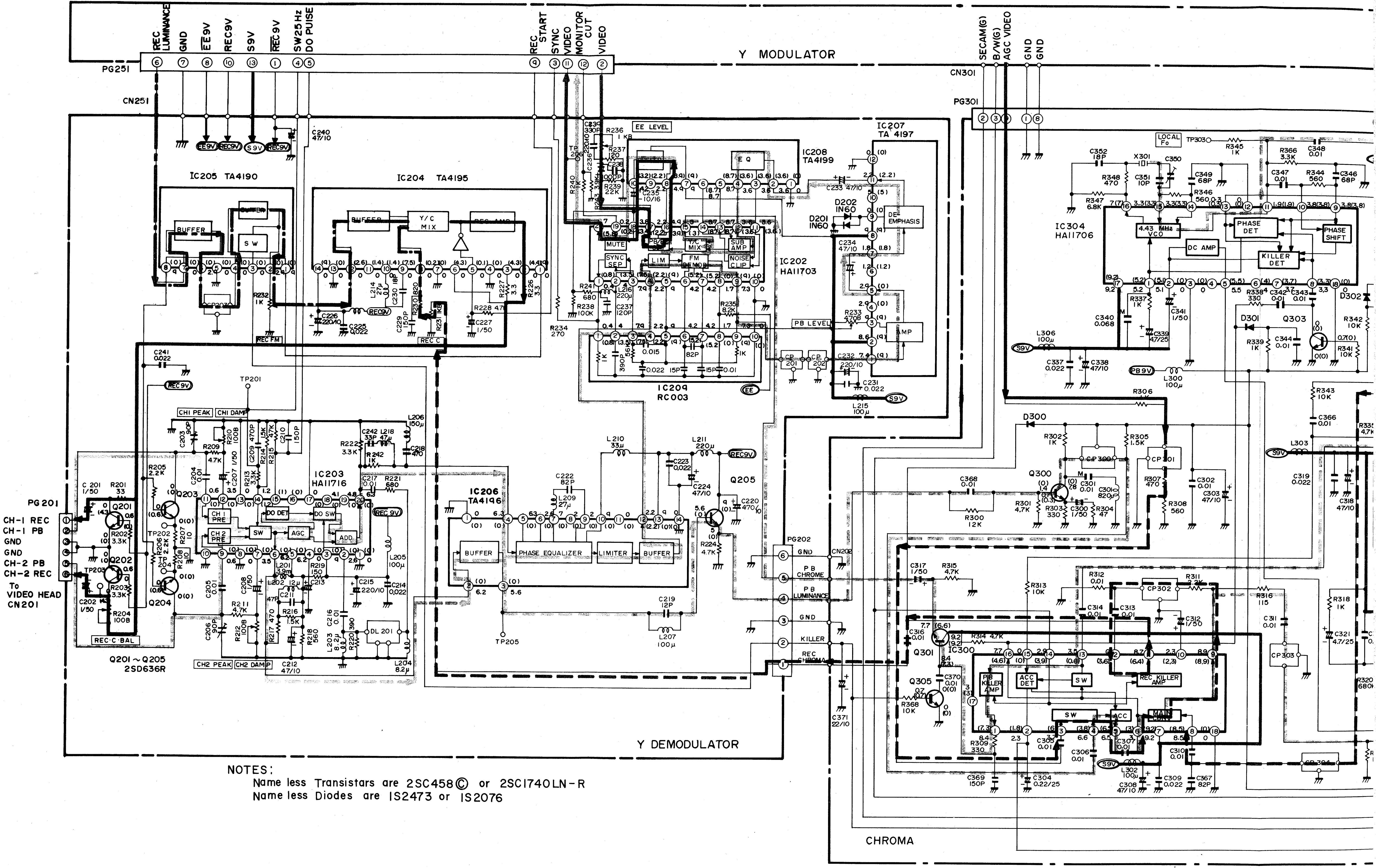
Q986

B	4.9 (4.9)
C	6.8 (6.8)
E	5 (5)

Q987

B	0 (0.6)
C	0.6 (0)
E	0 (0)

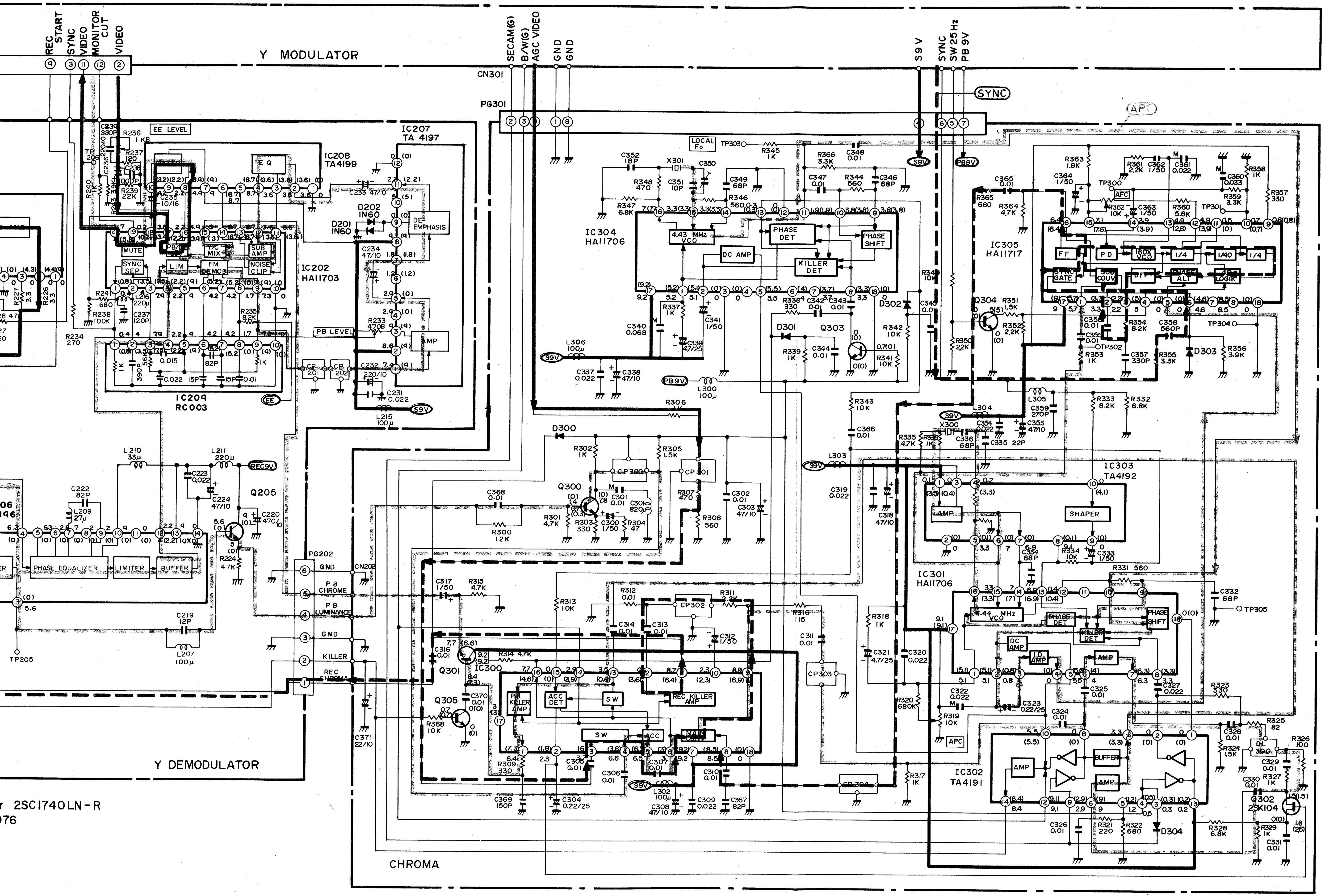
Y DEMODULATOR/CHROMA


Y MODULATOR
PG251
CN251
REC LUMINANCE
GND
EE 9V
REC9V
S9V
REC 9V
SW25 Hz
DO PULSE
REC START
SYNC
VIDEO
MONITOR CUT
VIDEO
IC205 TA4190
BUFFER
SW
IC204 TA4195
Y/C MIX
REC AMP
REC FM
REC C
EE LEVEL
IC208 TA4199
EQ
MUTE
PB/EE
SYNC SEP
LIM
FM DEMOD
Y/C MIX
SUB AMP
NOISE CLIP
IC202 HA11703
IC207 TA 4197
DE EMPHASIS
AMP
D202 IN60
D201 IN60
PB LEVEL
IC209 RC003
TP201
CHI PEAK
CHI DAMP
IC203 HA11716
CH 1 PRE
CH 2 PRE
DO DET
DO SW
AGC
ADD
DL 201
CH2 PEAK
CH2 DAMP
REC·C·BAL
IC206 TA4196
PHASE EQUALIZER
LIMITER
TP205
Q205
PG201
CH-1 REC
CH-1 PB
GND
GND
CH-2 PB
CH-2 REC
To VIDEO HEAD CN201
Q201
Q202
Q203
Q204
Q201 ~ Q205 2SD636R
PG202
CN202
GND
PB CHROME
PB LUMINANCE
GND
KILLER
REC CHROMA
Y DEMODULATOR
CN301
PG301
SECAM(G)
B/W(G)
AGC VIDEO
GND
GND
LOCAL Fo
TP303
X301
IC304 HA11706
4.43 MHz VCO
DC AMP
PHASE DET
PHASE SHIFT
KILLER DET
D300
D301
D302
Q300
Q301
Q303
Q305
IC300
PB KILLER AMP
ACC DET
SW
REC KILLER AMP
ACC
MAIN
CP302
CP303
CP304
CHROMA

NOTES:

Name less Transistars are 2SC458© or 2SC1740LN-R

Name less Diodes are 1S2473 or 1S2076


REC START
SYNC
VIDEO
MONITOR CUT
VIDEO
Y MODULATOR
SECAM(G)
B/W(G)
AGC VIDEO
GND
GND
CN301
PG301
S9V
SYNC
SW 25Hz
PB 9V
SYNC
APC
EE LEVEL
IC207 TA 4197
IC208 TA4199
EQ
MUTE
SYNC SEP
LIM
FM DEMOD
NOISE CLIP
SUB AMP
MIX
IC202 HA11703
D202 IN60
D201 IN60
DE EMPHASIS
AMP
PB LEVEL
CP 201
CP 202
IC209 RC003
EE
L215 100μ
S9V
LOCAL Fo
TP303
IC304 HA11706
4.43 MHz VCO
DC AMP
PHASE DET
PHASE SHIFT
KILLER DET
D301
Q303
D302
L306 100μ
S9V
PB9V
L300 100μ
IC305 HA11717
TP300
AFC
TP301
FF
PD
160X VCO
1/4
1/40
1/4
SYNC GATE
900 COUV
PHASE ALT
LOGIK
Q304
TP304
TP302
D303
L305
L304
X300
S9V
L303
S9V
IC303 TA4192
AMP
SHAPER
D300
Q300
CP300
CP301
L210 33μ
L211 220μ
REC9V
Q205
PHASE EQUALIZER
LIMITER
BUFFER
TP205
L207 100μ
PG202
CN202
GND
PB CHROME
PB LUMINANCE
GND
KILLER
REC CHROMA
Y DEMODULATOR
Q301
IC300
Q305
PB KILLER AMP
ACC DET
SW
REC KILLER AMP
SW
ACC
MAIN
CP302
CP303
CP304
L302 100μ
S9V
IC301 HA11706
4.44 MHz VCO
PHASE DET
PHASE SHIFT
KILLER DET
DC AMP
ID AMP
AMP
TP305
APC
IC302 TA4191
AMP
BUFFER
AMP
D304
DL 300
Q302 2SK104
CHROMA
r 2SC1740LN-R
976

REC/EE VIDEO

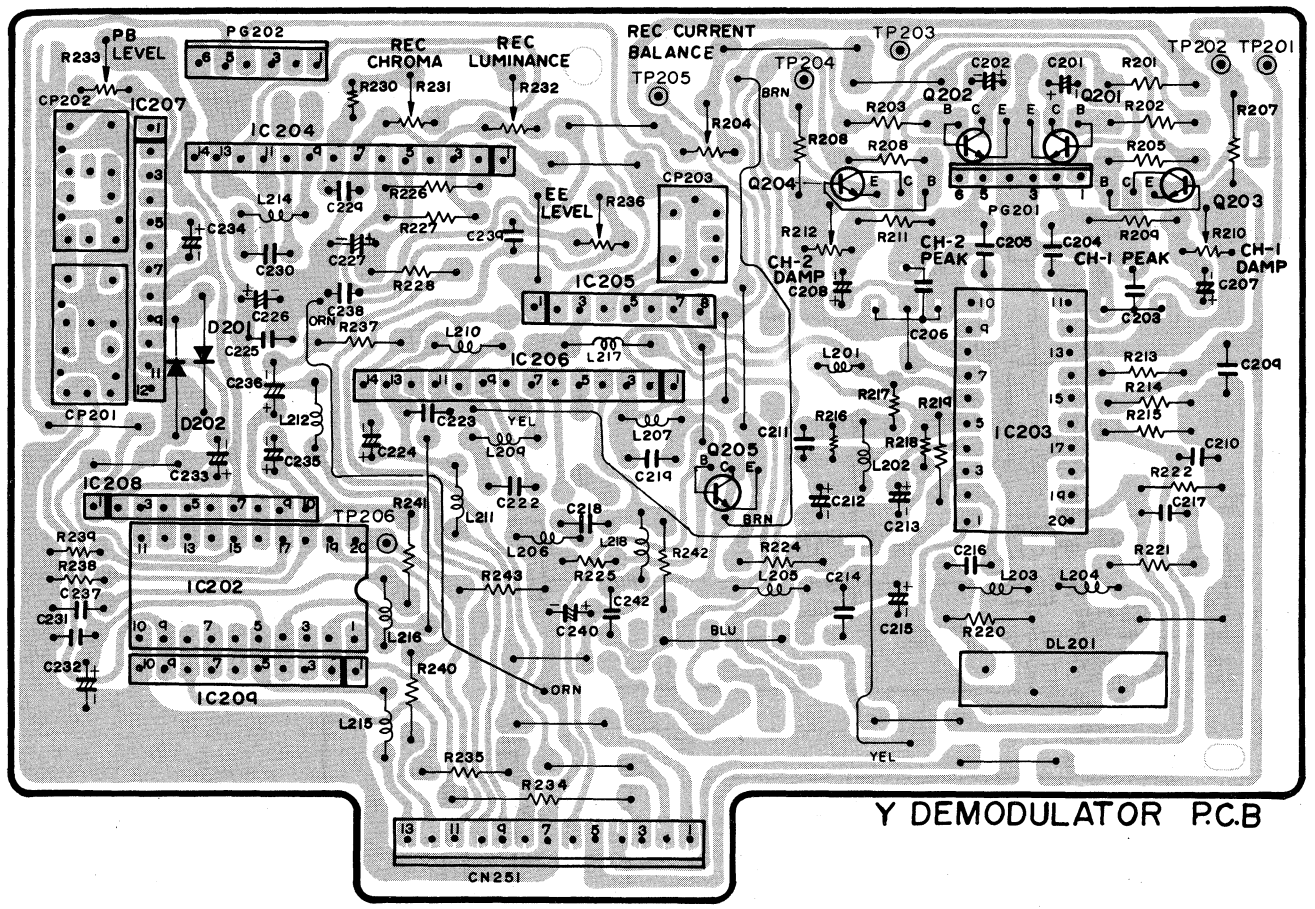
REC CHROMA & APC

REC LUMINANCE

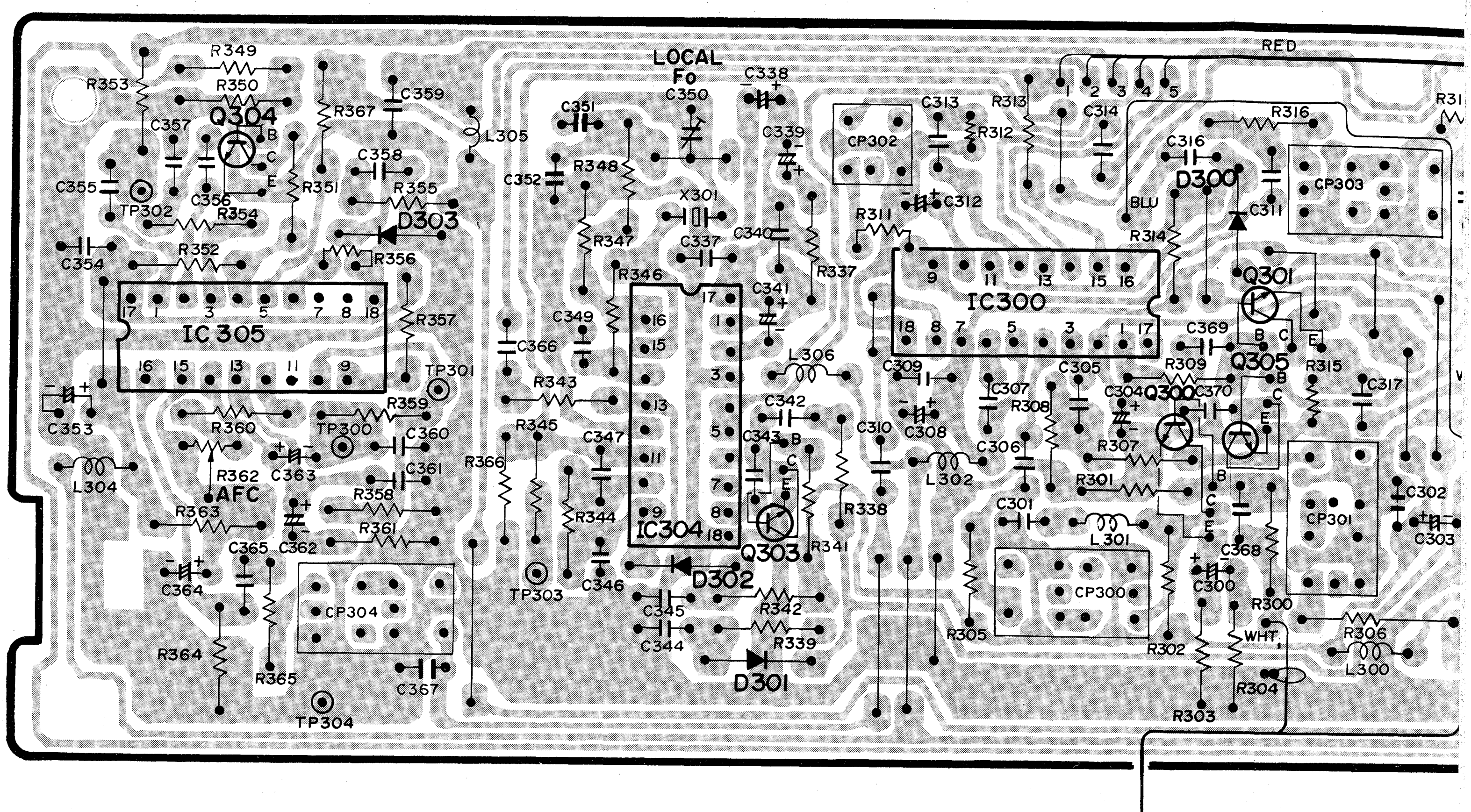
PB VIDEO

PB CHROMA & APC

PB LUMINANCE


PB LEVEL
R233
PG202
REC CHROMA
REC LUMINANCE
REC CURRENT BALANCE
TP203
TP202
TP201
TP204
TP205
CP202
IC207
IC204
Q202
Q201
Q204
Q203
EE LEVEL
CP203
IC205
CH-2 DAMP
CH-2 PEAK
CH-1 PEAK
CH-1 DAMP
PG201
IC206
IC203
Q205
IC208
TP206
IC202
IC209
CP201
D201
D202
DL201
BLU
BRN
YEL
ORN
CN251

Y DEMODULATOR P.C.B


LOCAL Fo
RED
Q304
IC305
AFC
TP300
TP301
TP302
TP303
TP304
D303
IC304
Q303
D302
D301
X301
CP302
CP303
CP304
CP300
CP301
IC300
Q301
D300
Q300
Q305
BLU
WHT

IC202

11	12	13	14	15	16	17	18	19	20
3.6 (3.6)	3.6(3.6)	8.7(8.7)	8.7 (8.7)	3.0 (3.0)	4.9(3.9)	2.2(2.2)	3.8 (3.4)	0.2(0.2)	7.0(5.8)
10	9	8	7	6	5	4	3	2	1
0 (0)	7.3(9.0)	1.7 (0)	4.2 (5.2)	4.2(5.2)	9.0(9.0)	2.2(2.2)	7.9 (7.5)	4.0(3.5)	0.4 (0.8)

IC204

7	6	5	4	3	2	1
0 (0)	0 (4.3)	0 (0.1)	0 (0)	0 (4.3)	0 (4.4)	0 (9.0)
14	13	12	11	10	9	8
0 (9.0)	0 (0)	0 (2.6)	0 (1.4)	0 (1.4)	0 (7.5)	0 (0.2)

IC205

1	2	3	4	5	6	7	8
9.0 (0)	2.9 (0)	0 (0)	0 (0)	0 (0)	2.9 (0)	0 (0)	9.0 (0)

IC206

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0 (0)	9.0(0)	2.2 (2.2)	0 (0)	9.0 (0)	2.0 (0)	2.0 (0)	7.0 (0)	2.6 (0)	6.3 (0)	6.3 (0)	5.6 (0)	6.2 (0)	0 (0)

IC207

1	7.4(9.0)
2	8.6(9.0)
3	9.0(9.0)
4	2.9 (0)
5	2.9 (0)
6	1.2 (1.2)
7	1.8 (1.8)
8	9.0(9.0)
9	0 (0)
10	5.0(5.0)
11	2.2(2.2)
12	0 (0)

IC208

1	2	3	4	5	6	7	8	9	10
0 (0)	3.6 (3.6)	3.6(3.6)	3.6 (3.6)	8.7 (8.7)	8.7(8.7)	9.0 (9.0)	4.9 (3.9)	2.2 (2.2)	4.2(3.2)

IC209

10	9	8	7	6	5	4	3	2	1
0 (0)	7.3 (9.0)	1.7 (0)	4.2 (5.2)	4.2 (5.2)	9.0(9.0)	2.2(2.2)	7.9 (7.5)	4.0 (3.5)	0.4 (0.8)

IC203

10	0 (0)	11	0.6 (0)
9	0.6 (0)	12	3.5 (0)
8	0 (0)	13	0 (0)
7	3.5 (0)	14	1.2 (1.2)
6	6.2 (0)	15	5.3 (1.0)
5	6.2 (0)	16	7.4 (0)
4	0 (0)	17	0 (0)
3	9.0 (0)	18	4.1 (0)
2	2.6 (0)	19	4.8 (0)
1	0 (0)	20	6.3 (0)

Q201

B	0.6 (0)
C	0 (4.3)
E	0 (0)

Q202

B	0.6 (0)
C	0 (4.3)
E	0 (0)

Q203

B	0 (0.6)
C	0 (0)
E	0 (0)

Q204

B	0 (0.6)
C	0 (0)
E	0 (0)

Q205

B	5.6 (0)
C	9.0 (0)
E	5.0 (0)

CN251

1	$\overline{\text{REC}}$ 9V
2	VIDEO
3	SYNC
4	SW 25Hz
5	DO OUT
6	REC LUMINANCE
7	GND
8	$\overline{\text{EE}}$ 9V
9	REC START
10	REC 9V
11	VIDEO OUT
12	MONITOR CUT
13	S 9V

To
Y MOD.
PG251

PG201

1	CH-1 REC
2	CH-1 PB
3	GND
4	GND
5	CH-2 PB
6	CH-2 REC

To
VIDEO
HEAD
CN201

PG202

1	REC CHROMA
2	CHROMA KILL
3	GND
4	PB LUMINANCE
5	PB CHROMA
6	GND

To
CHROMA
CN202

CN202

TO
Y DEMOD
PG 202

1	REC CHROMA
2	KILLER
3	GND
4	PB LUMINANCE
5	PB.CHROMA
6	GND

BLU
BRN
WHT GRN
WHT BLK

To
Y MODULATOR
CN301

1
2
3
4
5
6
7
8
9

IC305

7	1	2	3	4	5	6	7	8	18
9 (9)	5.7(5.7)	3.3(3.3)	2.2(2.2)	5 (5)	0 (0)	0.1 (0)	4.6(4.6)	8.5(8.5)	0 (0)
	16	15	14	13	12	11	10	9	
	6.4(6.4)	7.1(7.6)	3.9(3.9)	4.9(2.8)	4.9(3.9)	0.5 (0)	0.7(0.7)	0.8 (0.8)	

IC300

	9	10	11	12	13	14	15	16	
	6.9(6.9)	2.3(2.3)	8.7(6.4)	0(3.6)	3.5(0.6)	2.9(3.9)	0 (0)	7.7(4.6)	
18	8	7	6	5	4	3	2	1	17
0 (0)	8.5(8.5)	9.2(9.2)	3 (3)	6.5(6.5)	6.6(3.8)	3.7 (6)	2.3(1.8)	8.4(7.3)	3 (3)

IC304

		17	9.2(9.2)
16	7 (7)	1	5.2(5.2)
15	3.3(3.3)	2	5.1(5.1)
14	3.3(3.3)	3	0 (0)
13	0.3(0.3)	4	0 (0)
12	0 (0)	5	5.5(5.5)
11	1.9(1.9)	6	4 (4)
10	3.8(3.8)	7	3.7(3.7)
9	3.8(3.8)	8	3.3(3.3)
		18	0 (0)

IC303

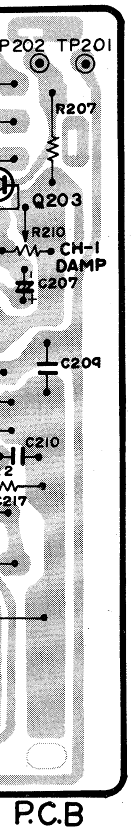
10	0(4.1)
9	0 (0)
8	0.1(9.1)
7	0(6.9)
6	0.01(7)
5	0.01(3.3)
4	0.02(3.3)
3	0 (0.4)
2	0.01(9.1)
1	0.01(3.5)

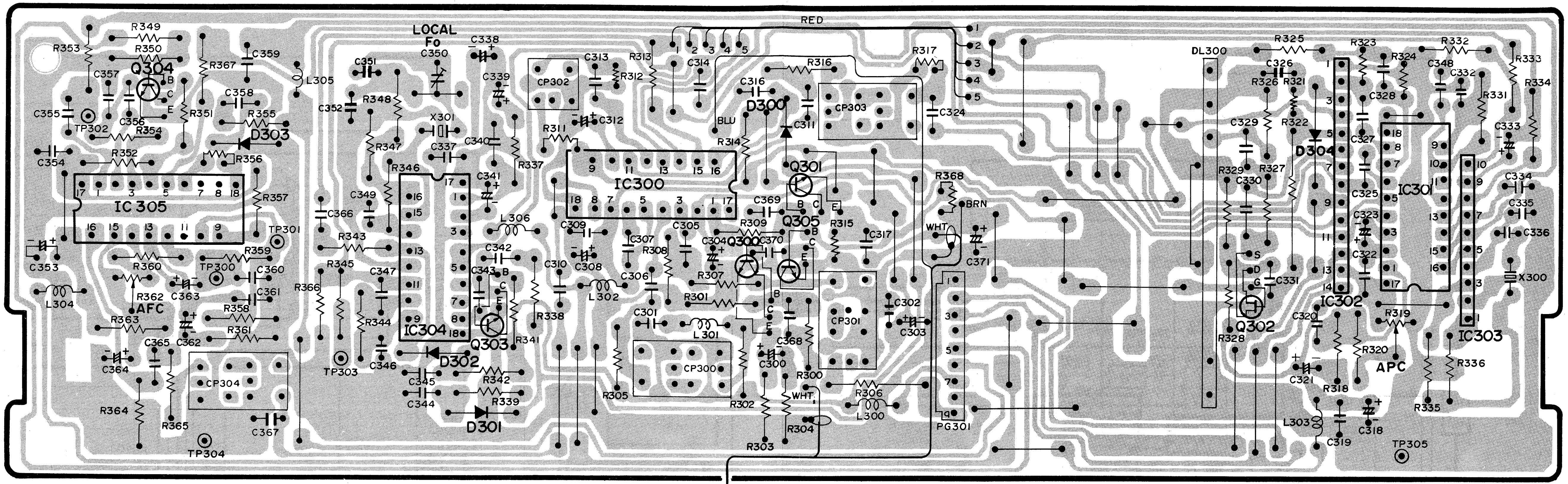
IC302

1	0 (0)
2	0 (0)
3	0.4(0.2)
4	0.6(0.3)
5	0 (0.5)
6	0(1.2)
7	0.03(3.3)
8	0 (0)
9	0 (9)
10	0(5.5)
11	0(0.01)
12	2.9(3.9)
13	0.01(9.1)
14	0.02(8.4)

IC 301

18	0 (0)		
8	3.3(3.3)	9	3.7(3.7)
7	6.3(6.3)	10	3.7(3.7)
6	4 (4)	11	2.3(2.3)
5	5.5 (5.5)	12	3.7(3.7)
4	0 (0)	13	0.4(0.4)
3	0.8(0.8)	14	6.9(6.9)
2	5.1(5.1)	15	7 (7)
1	5.1(5.1)	16	3.3(3.3)
17	9.1(9.1)		


P202
TP201
R207
Q203
R210
CH-1
DAMP
C207
C209
C210
P.C.B


LOCAL
Fo
RED
BLU
BRN
WHT
IC305
IC304
IC300
IC301
IC302
IC303
Q300
Q301
Q302
Q303
Q304
Q305
D300
D301
D302
D303
D304
DL300
X300
X301
CP300
CP301
CP302
CP303
CP304
PG301
L300
L301
L302
L303
L304
L305
L306
TP300
TP301
TP302
TP303
TP304
TP305
AFC
APC
R300
R302
R303
R304
R305
R306
R307
R308
R309
R311
R312
R313
R314
R315
R316
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R366
R367
R368
C300
C301
C302
C303
C304
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C306
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C360
C361
C362
C363
C364
C365
C366
C367
C369
C370
C371

CHROMA P.C.B

CN202

1	REC CHROMA	BLU
2	KILLER	BRN
3	GND	
4	PB LUMINANCE	WHT GRN
5	PB.CHROMA	WHT BLK
6	GND	

TO
Y DEMOD
PG 202

PG301

1	GND
2	SECAM
3	B/W
4	S 9V
5	SW 25Hz
6	SYNC
7	REC 9V
8	GND
9	AGC VIDEO

To
Y MODULATOR
CN301

E
To
Y MOD.
PG251

To
VIDEO
HEAD
CN201

To
CHROMA
CN202
E

IC305

7	1	2	3	4	5	6	7	8	18
9 (9)	5.7(5.7)	3.3(3.3)	2.2(2.2)	5 (5)	0 (0)	0.1 (0)	4.6(4.6)	8.5(8.5)	0 (0)
	16	15	14	13	12	11	10	9	
	6.4(6.4)	7.1(7.6)	3.9(3.9)	4.9(2.8)	4.9(3.9)	0.5 (0)	0.7(0.7)	0.8 (0.8)	

IC300

	9	10	11	12	13	14	15	16	
	6.9(6.9)	2.3(2.3)	8.7(6.4)	0(3.6)	3.5(0.6)	2.9(3.9)	0 (0)	7.7(4.6)	
18	8	7	6	5	4	3	2	1	17
0 (0)	8.5(8.5)	9.2(9.2)	3 (3)	6.5(6.5)	6.6(3.8)	3.7 (6)	2.3(1.8)	8.4(7.3)	3 (3)

IC304

		17	9.2(9.2)
16	7 (7)	1	5.2(5.2)
15	3.3(3.3)	2	5.1(5.1)
14	3.3(3.3)	3	0 (0)
13	0.3(0.3)	4	0 (0)
12	0 (0)	5	5.5(5.5)
11	1.9(1.9)	6	4 (4)
10	3.8(3.8)	7	3.7(3.7)
9	3.8(3.8)	8	3.3(3.3)
		18	0 (0)

IC303

10	0(4.1)
9	0 (0)
8	0.1(9.1)
7	0(6.9)
6	0.01(7)
5	0.01(3.3)
4	0.02(3.3)
3	0 (0.4)
2	0.01(9.1)
1	0.01(3.5)

IC302

1	0 (0)
2	0 (0)
3	0.4(0.2)
4	0.6(0.3)
5	0 (0.5)
6	0(1.2)
7	0.03(3.3)
8	0 (0)
9	0 (9)
10	0(5.5)
11	0(0.01)
12	2.9(3.9)
13	0.01(9.1)
14	0.02(8.4)

IC 301

18	0 (0)		
8	3.3(3.3)	9	3.7(3.7)
7	6.3(6.3)	10	3.7(3.7)
6	4 (4)	11	2.3(2.3)
5	5.5 (5.5)	12	3.7(3.7)
4	0 (0)	13	0.4(0.4)
3	0.8(0.8)	14	6.9(6.9)
2	5.1(5.1)	15	7 (7)
1	5.1(5.1)	16	3.3(3.3)
17	9.1(9.1)		

Q305

B	0.7(0.7)
C	0 (0)
E	0 (0)

Q304

B	0 (0)
C	5 (5)
E	0 (0)

Q303

B	0.7 (0)
C	0 (0)
E	0 (0)

Q302

G	1.8(2.6)
D	1.5 (1.5)
S	0 (0)

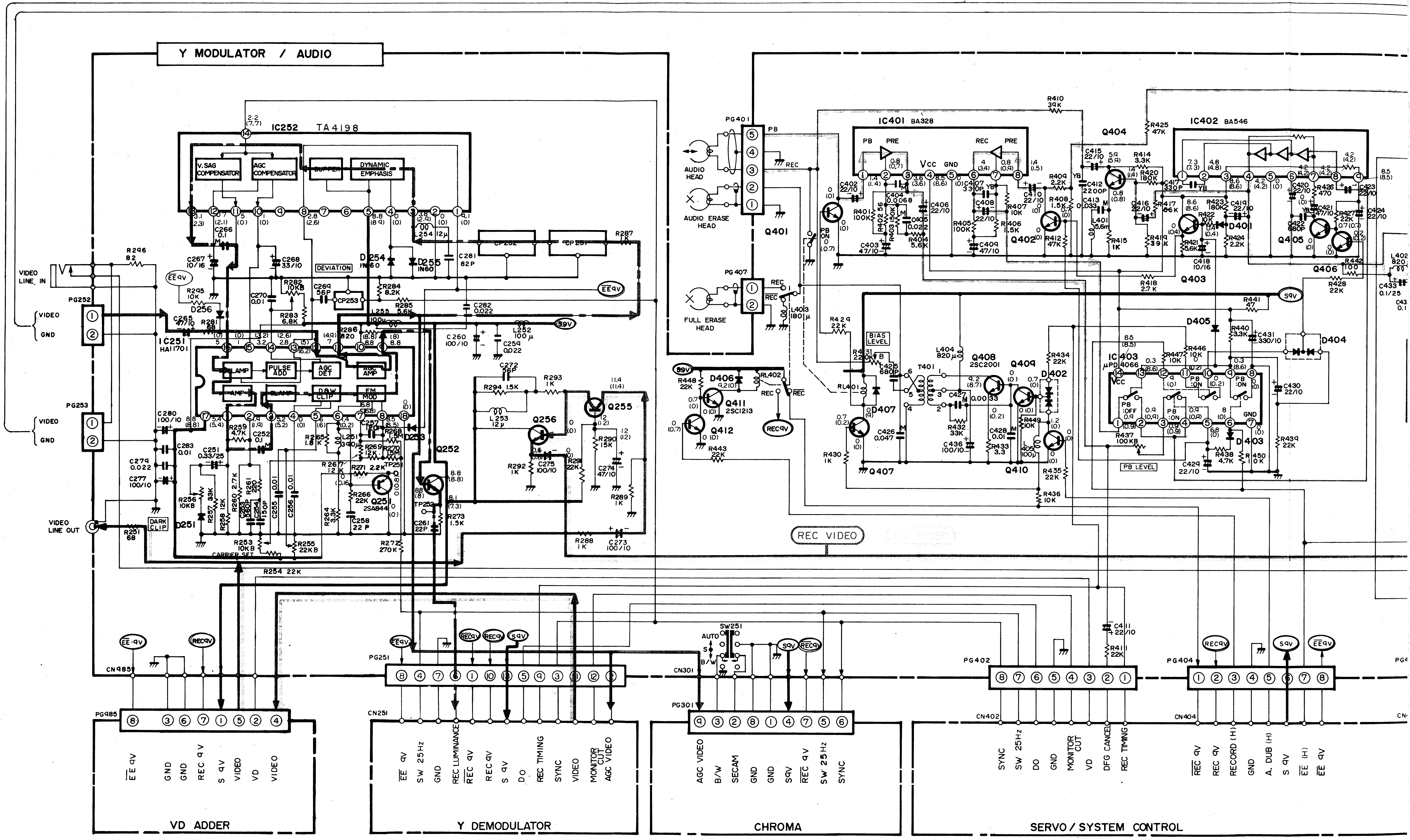
Q301

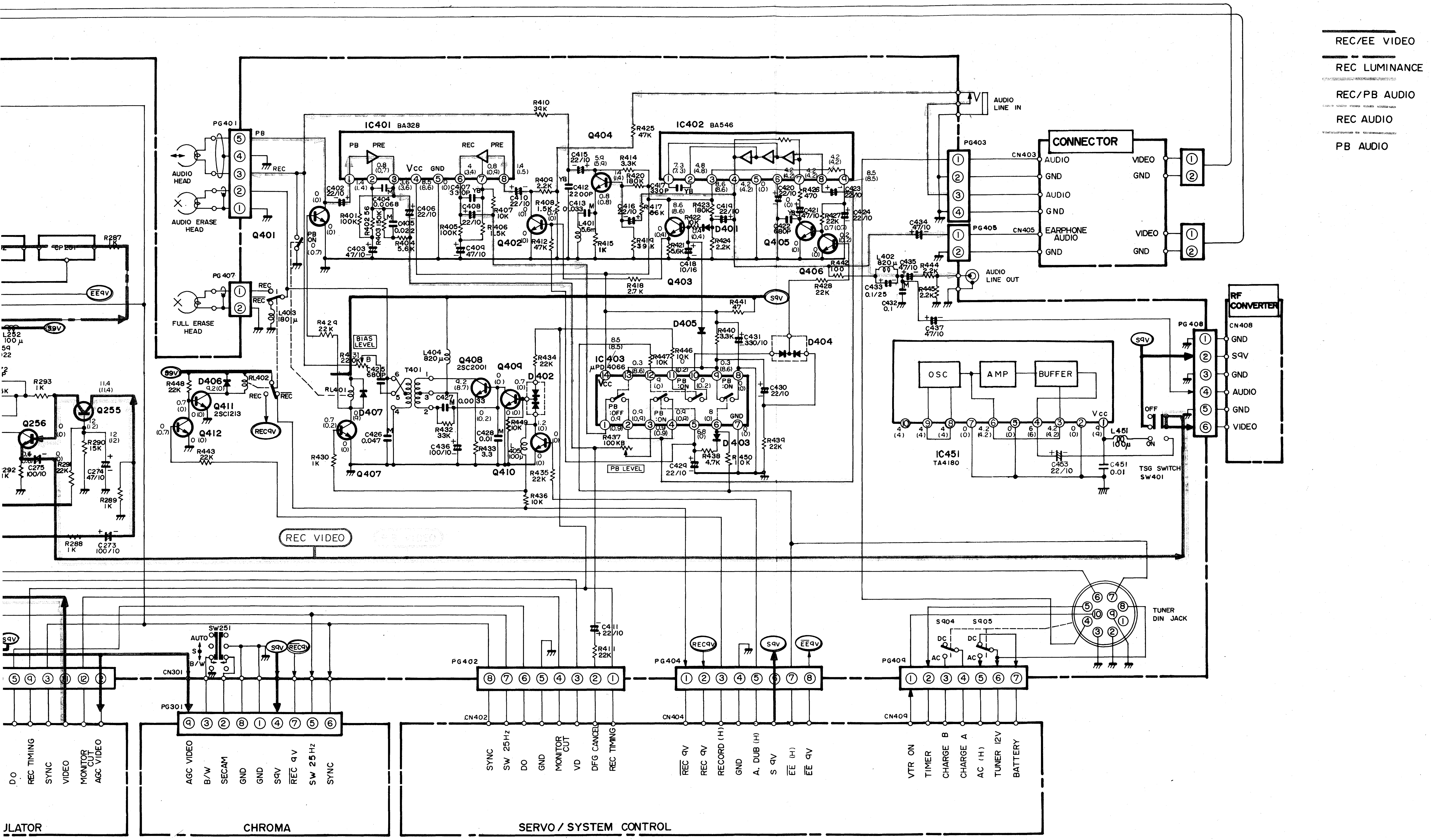
B	8.4(7.3)
C	9.2(9.2)
E	7.7(6.6)

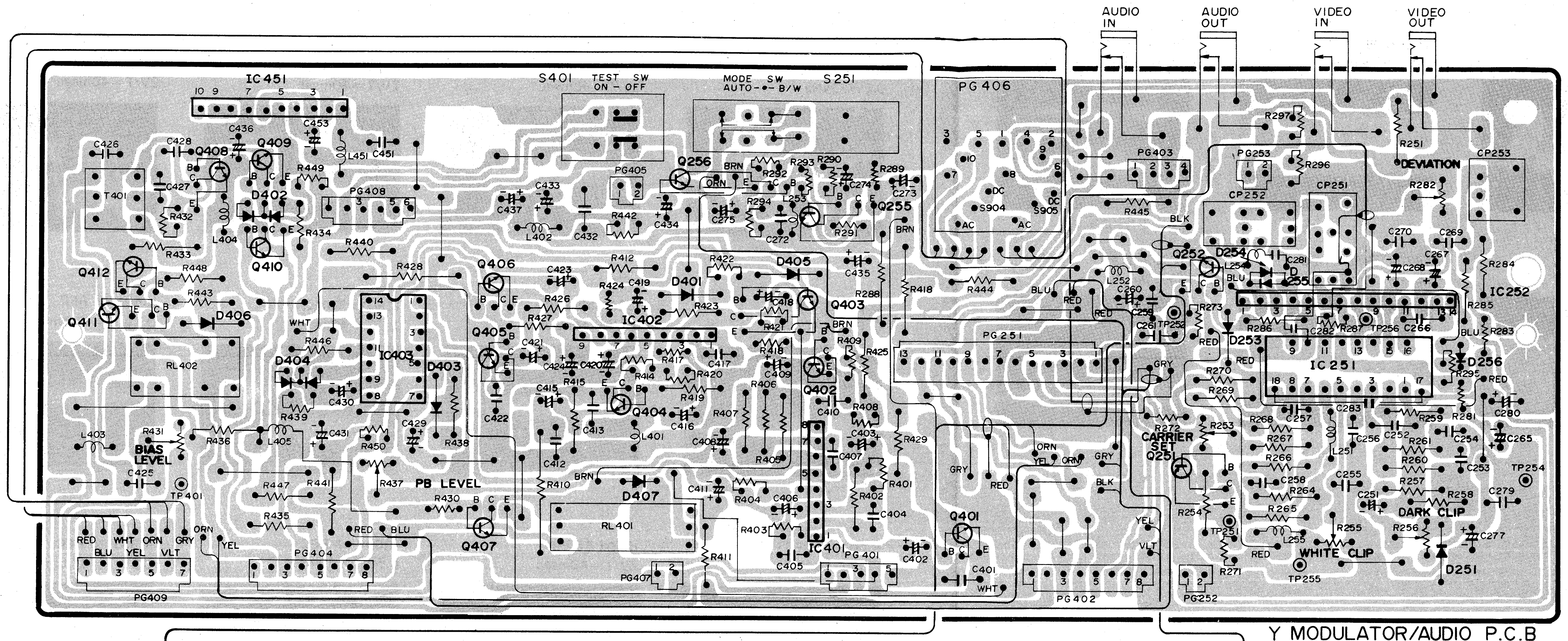
Q300

B	1.4 (0)
C	7.8 (0)
E	0.7(0.3)

Y MODULATOR/AUDIO

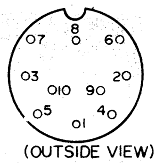

Y MODULATOR / AUDIO
IC252 TA4198
V.SAG COMPENSATOR
AGC COMPENSATOR
BUFFER
DYNAMIC EMPHASIS
IC251 HA11701
CLAMP
PULSE ADD
AGC DET
AGC AMP
AMP
CLAMP
D&W CLIP
FM MOD
DEVIATION
CARRIER SET
DARK CLIP
VIDEO LINE IN
VIDEO LINE OUT
PG252
PG253
VIDEO
GND
Q251 2SA844
Q252
Q255
Q256
D251
D253
D254 IN60
D255 IN60
D256
CP251
CP252
CP253
EE9V
9V
REC9V
S9V
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
PG401
PG407
PB
REC
Q401
IC401 BA328
PB PRE
REC PRE
Vcc
GND
Q402
Q403
Q404
Q405
Q406
IC402 BA546
Q407
Q408 2SC2001
Q409
Q410
Q411 2SC1213
Q412
D401
D402
D403
D404
D405
D406
D407
RL401
RL402
T401
BIAS LEVEL
IC403 μPD4066
PB :OFF
PB :ON
PB LEVEL
REC VIDEO
CN985
PG985
VD ADDER
EE 9V
GND
REC 9V
S 9V
VIDEO
VD
PG251
CN251
Y DEMODULATOR
SW 25Hz
REC LUMINANCE
DO
REC TIMING
SYNC
MONITOR CUT
AGC VIDEO
CN301
PG301
SW251
AUTO
B/W
CHROMA
SECAM
PG402
CN402
SERVO / SYSTEM CONTROL
DFG CANCEL
PG404
CN404
RECORD (H)
A. DUB (H)
EE (H)


REC/EE VIDEO
REC LUMINANCE
REC/PB AUDIO
REC AUDIO
PB AUDIO
IC401 BA328
IC402 BA546
IC403 μPD4066
IC451 TA4180
Q401
Q402
Q403
Q404
Q405
Q406
Q407
Q408 2SC2001
Q409
Q410
Q411 2SC1213
Q412
Q255
Q256
D401
D402
D403
D404
D405
D406
D407
PG401
PG402
PG403
PG404
PG405
PG407
PG408
PG409
PG301
CN301
CN402
CN403
CN404
CN405
CN408
CN409
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO LINE IN
AUDIO LINE OUT
CONNECTOR
AUDIO
GND
VIDEO
EARPHONE AUDIO
RF CONVERTER
OSC
AMP
BUFFER
BIAS LEVEL
PB LEVEL
T401
RL401
RL402
L401
L402
L403 180μ
L404 820μ
L451
TSG SWITCH SW401
OFF
ON
SW251
AUTO
S
B/W
TUNER DIN JACK
S904
S905
DC
AC
REC VIDEO
9V
EE9V
REC9V
AGC VIDEO
B/W
SECAM
GND
9V
REC 9V
SW 25Hz
SYNC
SW 25Hz
DO
GND
MONITOR CUT
VD
DFG CANCEL
REC TIMING
REC 9V
REC 9V
RECORD (H)
GND
A. DUB (H)
S 9V
EE (H)
EE 9V
VTR ON
TIMER
CHARGE B
CHARGE A
AC (H)
TUNER 12V
BATTERY
DO
REC TIMING
SYNC
VIDEO
MONITOR CUT
AGC VIDEO
JLATOR
CHROMA
SERVO / SYSTEM CONTROL


AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT
IC451
S401 TEST SW ON - OFF
MODE SW AUTO -•- B/W
S251
PG406
PG403
PG253
CP253
CP252
CP251
DEVIATION
PG405
PG408
Q256
Q255
Q408
Q409
Q410
Q412
Q411
Q406
Q405
Q404
Q403
Q402
Q401
Q407
Q252
Q251
D402
D404
D403
D406
D401
D405
D407
D253
D254
D255
D256
D251
IC402
IC403
IC401
IC251
IC252
T401
RL402
RL401
BIAS LEVEL
PB LEVEL
CARRIER SET
DARK CLIP
WHITE CLIP
TP401
TP251
TP252
TP254
TP255
TP256
PG409
PG404
PG407
PG401
PG402
PG252
PG251
S904
S905
RED WHT ORN GRY
BLU YEL VLT

Y MODULATOR/AUDIO P.C.B

TUNER/ADAPTOR


1
2
3
4
5
6
7
8
9
10

(OUTSIDE VIEW)

IC252

1	2	3	4	5	6	7
9.1(0)	0(0)	3.8(2.9)	0	8.8(8.9)	—	—
8	9	10	11	12	13	14
2.8(2.6)	—	1.0(0)	5.0(0)	0.7(2.1)	3.1(2.3)	2.2(7.7)

IC401

8	1.4(1.5)
7	0.8(0.9)
6	4.0(3.4)
5	0(0)
4	8.5(8.6)
3	3.6(3.6)
2	0.8(0.9)
1	1.4(1.4)

IC403

14	8.5(8.6)	1	0.9(0.9)
13	0.3(8.6)	2	0.9(0.9)
12	9.0(0)	3	0.9(0.9)
11	0(0.2)	4	0.9(0.9)
10	0(0.2)	5	6.8(0)
9	0.3(8.6)	6	8.0(0)
8	0(0)	7	0(0)

Q251

B	0(0.16)
C	0(0)
E	0(0.8)

Q252

B	8.8(8.0)
C	8.8(8.8)
E	8.1(7.3)

CN985

1	S9V	BRN
2	VD	RED
3	GND	GRY
4	VIDEO	
5	VIDEO	BLK
6	GND	
7	REC 9V	ORN
8	$\overline{\text{EE}}$ 9V	VLT

TO VD ADDER PG985

PG407

TO FULL ERASE HEAD CN407

1	FULL ERASE
2	GND

PG408

TO RF CONVERTER CN408

1	GND
2	S9V
3	GND
4	AUDIO
5	GND
6	VIDEO

PG409

TO SYSTEM CONTROL CN409

1	VTR ON
2	TIMER
3	CHARGE B
4	CHARGE A
5	AC (H)
6	TUNER 12V
7	BATTERY

PG403

TO CAMERA CONNECTOR CN403

1	AUDIO
2	GND
3	AUDIO
4	GND

PG404

TO SYSTEM CONTROL CN404

1	$\overline{\text{REC}}$ 9V
2	REC 9V
3	REC(H)
4	GND
5	DUB(H)
6	S9V
7	EE 9V
8	$\overline{\text{EE}}$ 9V

PG405

TO CAMERA CONNECTOR CN405

1	EARPHONE
2	GND

PG401

TO AUDIO HEAD CN401

1	GND
2	AUDIO ERASE
3	AUDIO REC
4	GND
5	AUDIO PB

PG402

TO SERVO CN402

1	REC TIMING
2	DFG CANCEL
3	VD
4	MONITOR CUT
5	GND
6	DO
7	SW25Hz
8	SYNC

CN301

TO CHROMA PG301

1	GND	BLK
2	SECAM	BRN
3	B/W	BRN
4	S 9V	RED
5	SW25Hz	YEL
6	SYNC	VLT
7	$\overline{\text{REC}}$ 9V	GRY
8	GND	
9	AGC VIDEO	

PG252

TO CAMERA CONNECTOR CN252

1	VIDEO
2	GND

PG253

TO CAMERA CONNECTOR CN253

1	VIDEO
2	GND

PG251

TO Y DEMOD CN251

1	$\overline{\text{REC}}$ 9V
2	AGC VIDEO
3	SYNC
4	SW 25Hz
5	DO
6	REC FM
7	GND
8	$\overline{\text{EE}}$ 9V
9	REC TIMING
10	REC 9V
11	VIDEO
12	MONITOR CUT
13	S 9V

Q255

B	3.5(3.5)
C	6.0(6.0)
E	2.4(2.4)

Q256

B	6.0(6.0)
C	9.0(9.0)
E	5.4(5.4)

Q401

B	0(0.7)
C	0(0)
E	0(0)

Q402

B	0.7(0)
C	0(0)
E	0(0)

Q403

B	0.4(0.4)
C	8.6(8.6)
E	0.4(0)

Q404

B	1.4(1.4)
C	5.9(5.9)
E	0.8(0.8)

Q405

B	0.7(0)
C	0(0)
E	0(0)

Q406

B	0.2(0.2)
C	0.7(0.7)
E	0(0)

Q407

B	0.7(0.2)
C	0(9.0)
E	0(0)

Q408

B	0(0)
C	9.2(8.7)
E	0(0.2)

Q409

B	0.7(0)
C	0(0)
E	0(0)

Q410

B	0(0)
C	1.2(0)
E	0(0)

Q411

B	0.7(0)
C	0(9.2)
E	0(0)

Q412

B	0(0.7)
C	0.7(0)
E	0(0)

IC402

9	8	7	6	5	4	3	2	1
8.5(8.5)	4.2(4.2)	4.2(4.2)	4.2(4.2)	0(0)	4.2(4.2)	8.6(8.6)	4.8(4.8)	7.3(7.3)

IC451

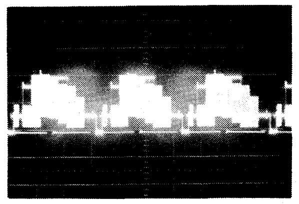
10	9	8	7	6	5	4	3	2	1
4.0(4.0)	4.0(4.0)	4.0(4.0)	0(0)	4.2(4.2)	0(0)	6.0(6.0)	4.2(4.2)	0(0)	9.0(9.0)

IC251

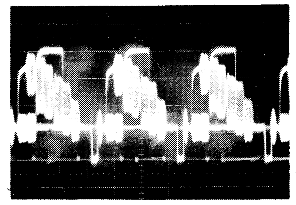
	9	10	11	12	13	14	15	16	
	8.8(8.0)	8.8(8.8)	7.0(4.9)	6.2(5.0)	2.8(2.6)	3.2(3.2)	1.0(0)	5.0(0)	
18	8	7	6	5	4	3	2	1	17
0(0)	8.5(6.8)	6.8(6.8)	1.4(0.2)	6.0(6.0)	0(0)	5.2(5.2)	1.9(1.9)	5.4(5.4)	8.8(8.8)

Y DEMODULATOR WAVEFORMS

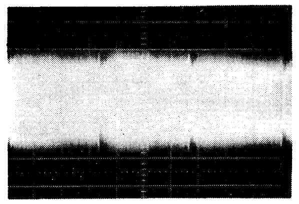
TP206 REC
1V/20μs.div.



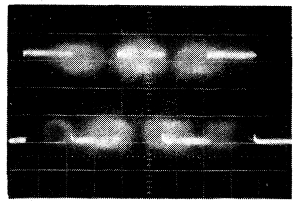
IC204 ⑪ REC
0.2V/20μs.div.



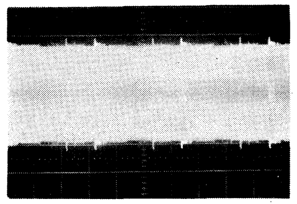
TP205 PB
SP 0.2V/5ms.div.



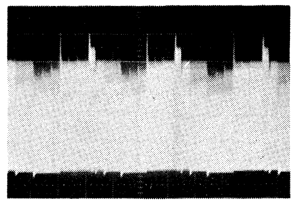
TP201 PB/REC
2V/10μs.div.



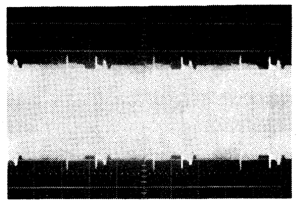
TP203 REC
1V/20μs.div.



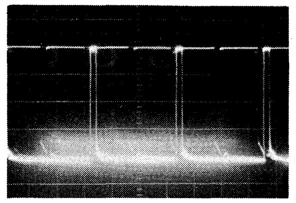
IC202 ⑨ PB
0.2/20μs.div.



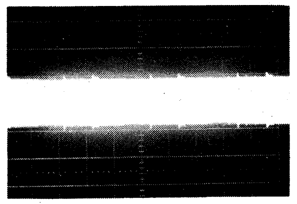
TP202, TP204, REC
50mV/20μs.div.



IC202 ① PB
2V/20μs.div.

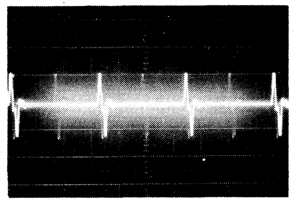


TP206 PB
0.5V/20μs.div.

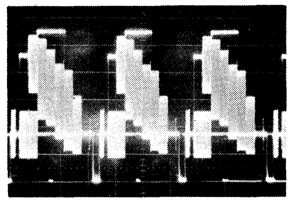


Y MODULATOR WAVEFORMS

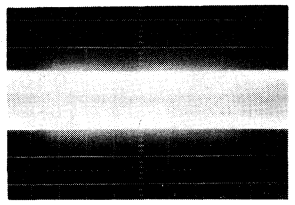
IC251 ⑬ REC/STOP
1V/20μs.div.



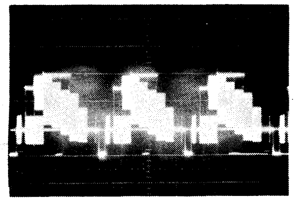
IC201 ⑯ STOP
0.2V/20μs.div.



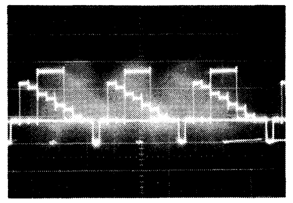
TP252 REC
0.5V/20μs.div.



PG252 ① STOP
0.5V/20μs.div.

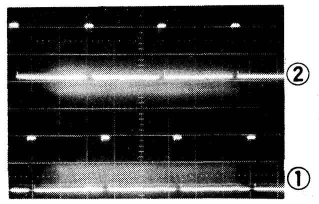


IC251 ⑪ REC
0.2V/20μs.div.

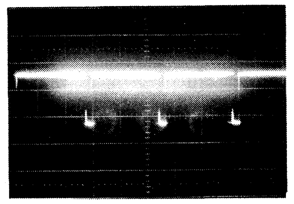


SYSTEM CONTROL WAVEFORMS

IC901 ① ② STOP
① ② 5V/ms. div.

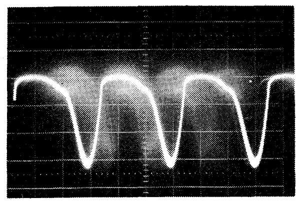


IC901 ㊶ STOP
50mV/2mV. div.

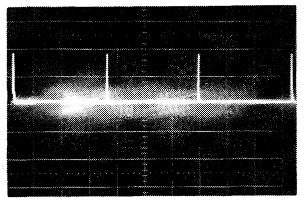


SERVO WAVEFORMS

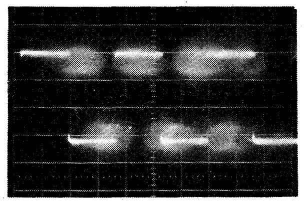
IC501 ① REC
0.2V/32kHz



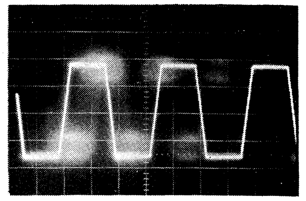
IC501 ⑩ REC
2V/T=40msec



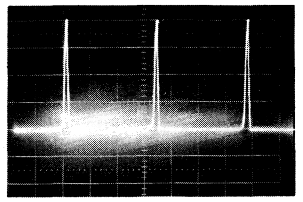
IC501 ⑯ REC
2V/T=40msec



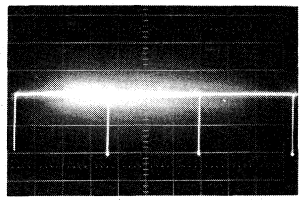
IC501 ㉔ PB
2V/T=40msec



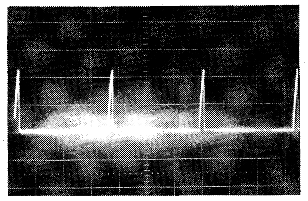
IC501 ② PB
0.5V/T=40msec



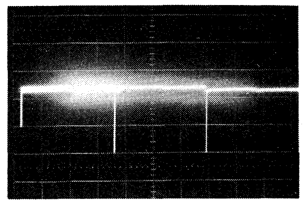
IC501 ⑪ REC
2V/T=40msec



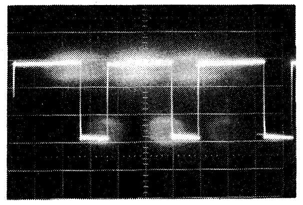
IC501 ⑰ REC
2V/T=40msec



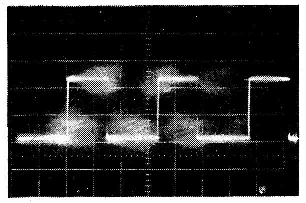
IC501 ㉕ REC
0.2V/T=47.6msec



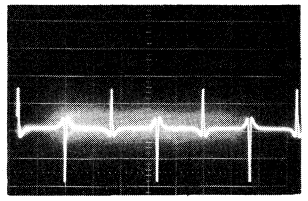
IC501 ④ REC
2V/T=40msec



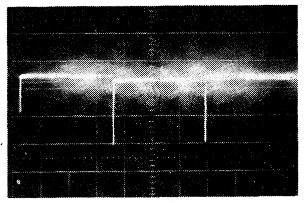
IC501 ⑪ PB
2V/T=40msec



IC501 ⑲ REC
0.5V/T=40msec



IC501 ㉖ REC
0.2V/T=47.6msec



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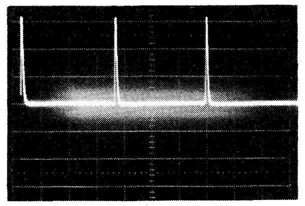
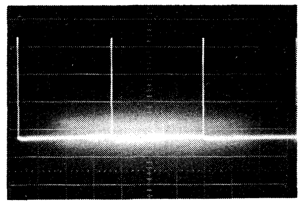
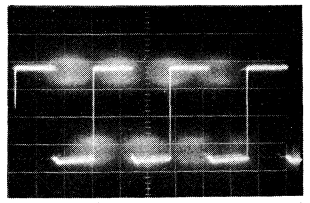
IC501 ⑧ REC
0.2V/T=40msec



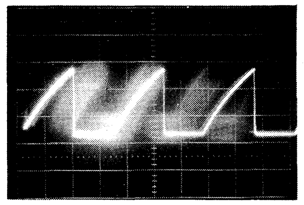
IC501 ⑫ REC
0.2V/T=40msec



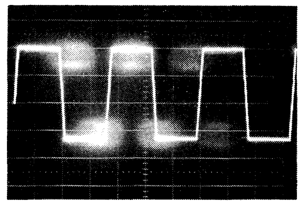
IC501 ㉒ REC
0.5V/126Hz



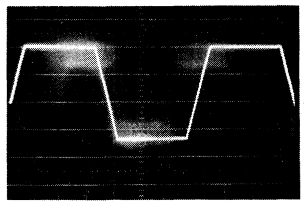
IC501 ⑩ PB
2V/T=40msec



IC501 ⑭ REC
2V/T=40msec

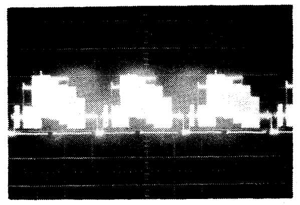


IC501 ㉔ REC
2V/T=47.6msec

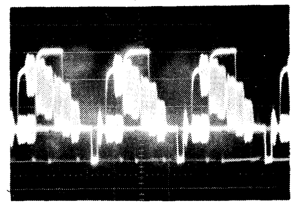


Y DEMODULATOR WAVEFORMS

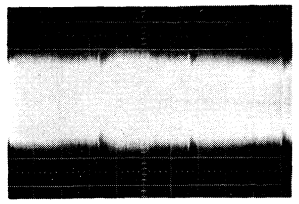
TP206 REC
1V/20µs.div.



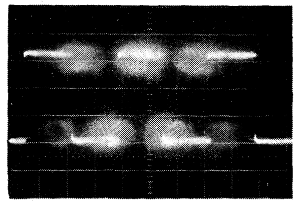
IC204 ⑪ REC
0.2V/20µs.div.



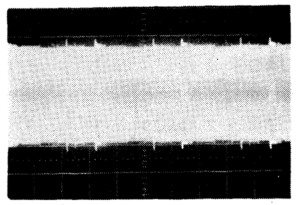
TP205 PB
SP 0.2V/5ms.div.



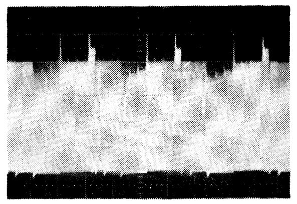
TP201 PB/REC
2V/10µs.div.



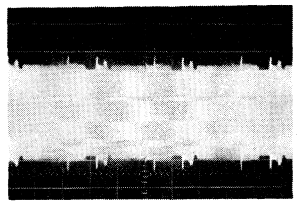
TP203 REC
1V/20µs.div.



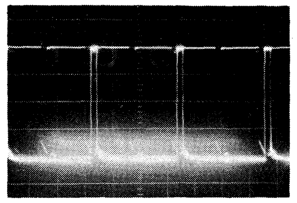
IC202 ⑨ PB
0.2/20µs.div.



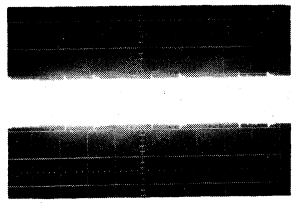
TP202, TP204, REC
50mV/20µs.div.



IC202 ① PB
2V/20µs.div.

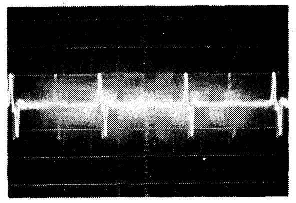


TP206 PB
0.5V/20µs.div.

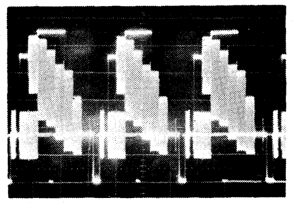


Y MODULATOR WAVEFORMS

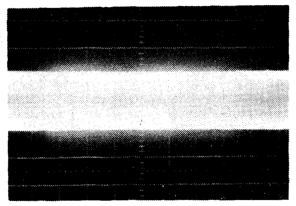
IC251 ⑬ REC/STOP
1V/20µs.div.



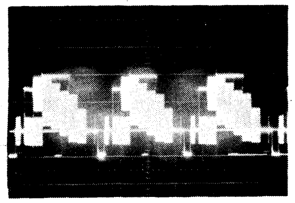
IC201 ⑯ STOP
0.2V/20µs.div.



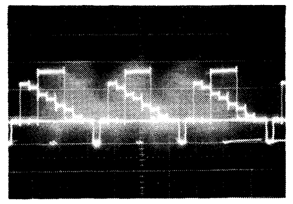
TP252 REC
0.5V/20µs.div.



PG252 ① STOP
0.5V/20µs.div.

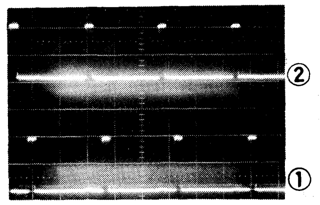


IC251 ⑪ REC
0.2V/20µs.div.

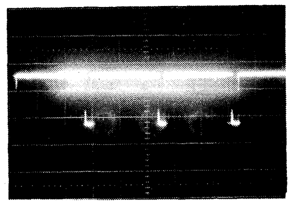


SYSTEM CONTROL WAVEFORMS

IC901 ① ② STOP
① ② 5V/ms. div.

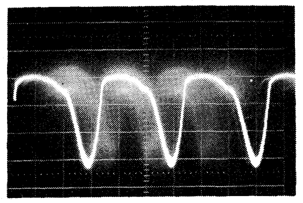


IC901 ㊶ STOP
50mV/2mV. div.

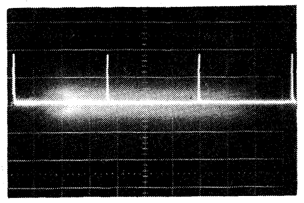


SERVO WAVEFORMS

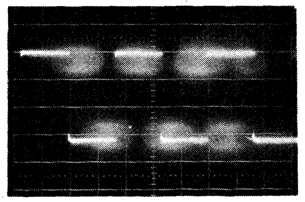
IC501 ① REC
0.2V/32kHz



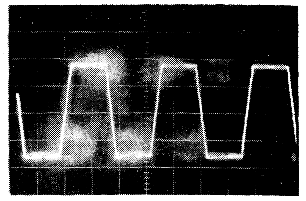
IC501 ⑩ REC
2V/T=40msec



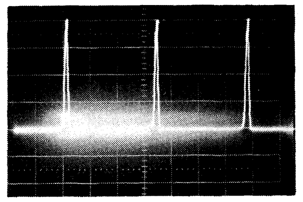
IC501 ⑯ REC
2V/T=40msec



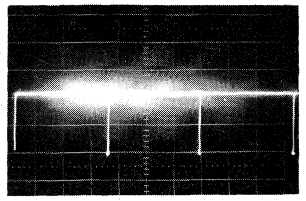
IC501 ㉔ PB
2V/T=40msec



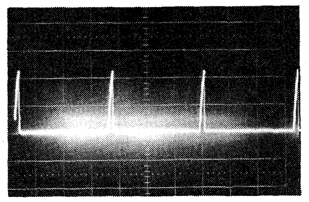
IC501 ② PB
0.5V/T=40msec



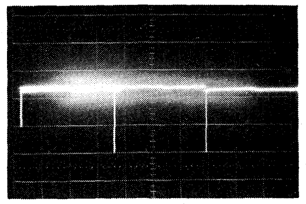
IC501 ⑪ REC
2V/T=40msec



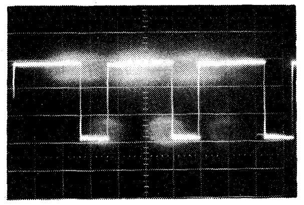
IC501 ⑰ REC
2V/T=40msec



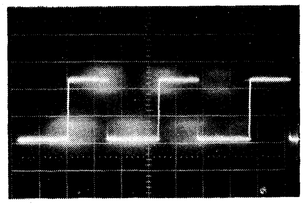
IC501 ㉕ REC
0.2V/T=47.6msec



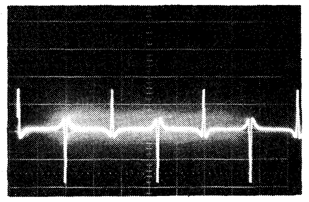
IC501 ④ REC
2V/T=40msec



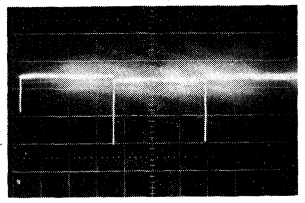
IC501 ⑪ PB
2V/T=40msec



IC501 ⑲ REC
0.5V/T=40msec



IC501 ㉖ REC
0.2V/T=47.6msec



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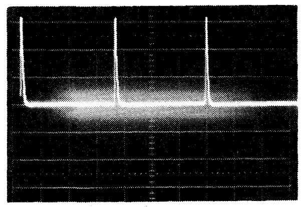
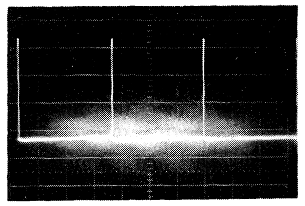
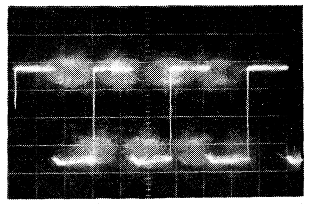
IC501 ⑧ REC
0.2V/T=40msec



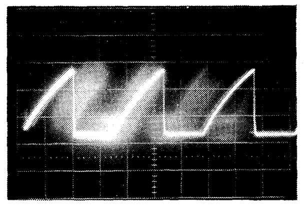
IC501 ⑫ REC
0.2V/T=40msec



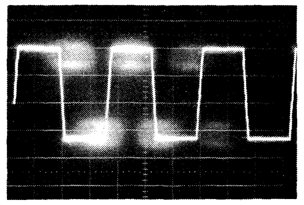
IC501 ㉒ REC
0.5V/126Hz



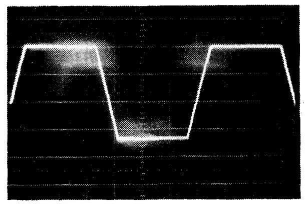
IC501 ⑩ PB
2V/T=40msec



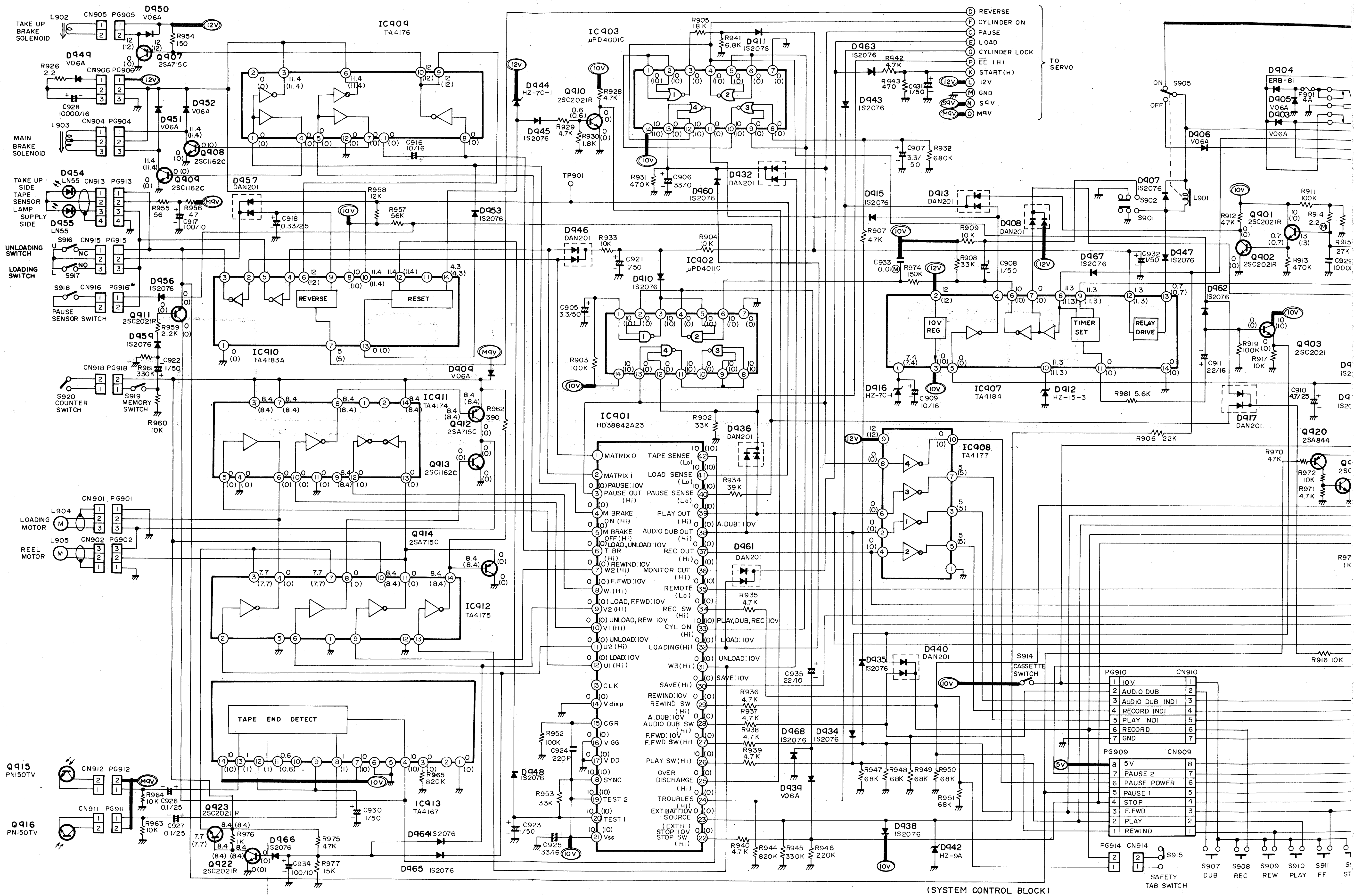
IC501 ⑭ REC
2V/T=40msec



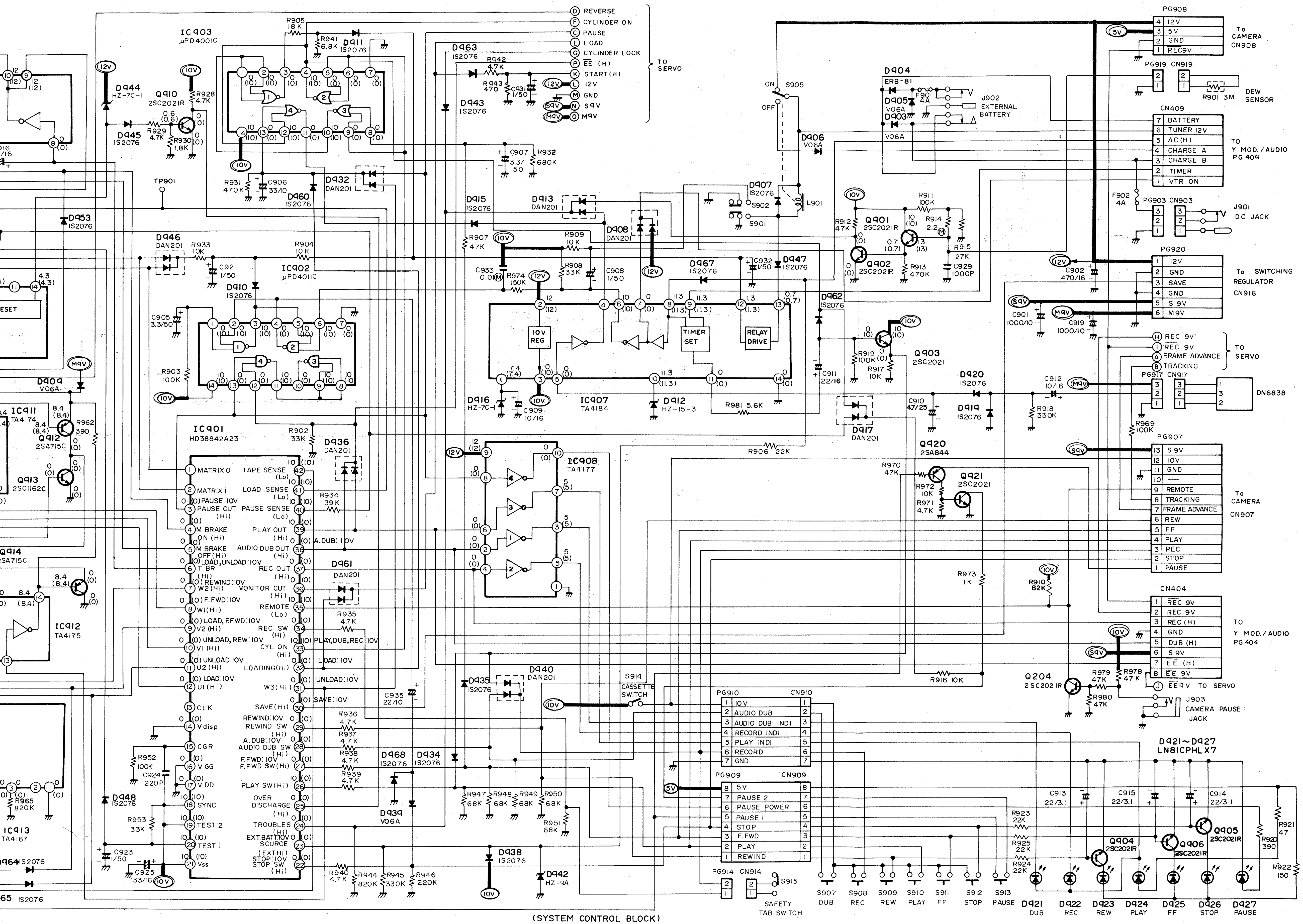
IC501 ㉔ REC
2V/T=47.6msec



SYSTEM CONTROL

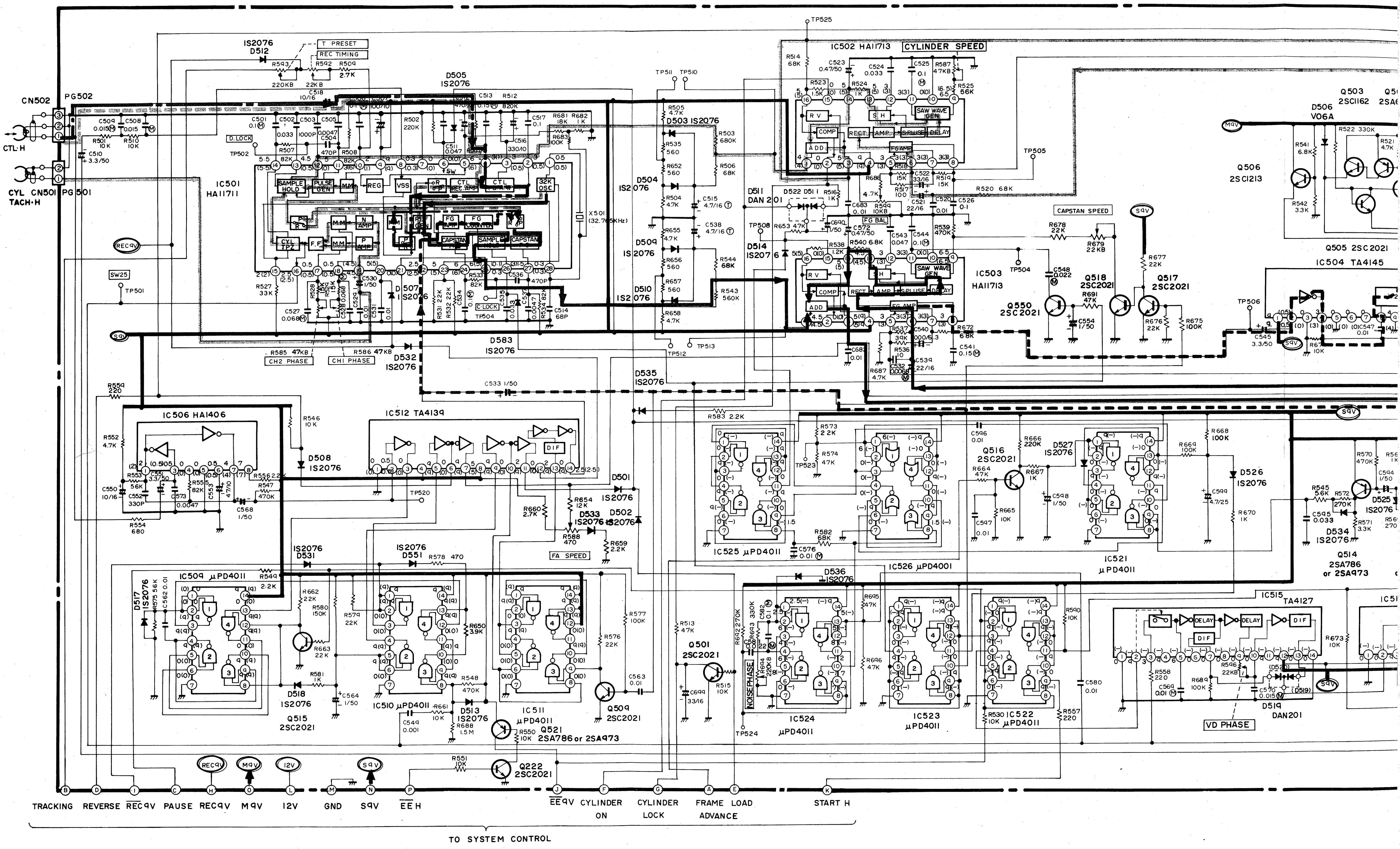

TAKE UP BRAKE SOLENOID
MAIN BRAKE SOLENOID
TAKE UP SIDE TAPE SENSOR LAMP SUPPLY SIDE
UNLOADING SWITCH
LOADING SWITCH
PAUSE SENSOR SWITCH
S920 COUNTER SWITCH
S919 MEMORY SWITCH
LOADING MOTOR
REEL MOTOR
Q915 PN150TV
Q916 PN150TV
D950 V06A
D949 V06A
D951 V06A
D952 V06A
Q907 2SA715C
Q908 2SC1162C
Q909 2SC1162C
D954 LN55
D955 LN55
D956 1S2076
Q911 2SC2021R
D959 1S2076
D957 DAN201
D953 1S2076
IC909 TA4176
IC910 TA4183A
REVERSE
RESET
IC911 TA4174
Q912 2SA715C
Q913 2SC1162C
D909 V06A
Q914 2SA715C
IC912 TA4175
TAPE END DETECT
IC913 TA4167
Q923 2SC2021R
Q922 2SC2021R
D966 1S2076
D964 1S2076
D965 1S2076
D944 HZ-7C-1
D945 1S2076
Q910 2SC2021R
IC903 µPD4001C
D911 1S2076
D932 DAN201
D960 1S2076
TP901
D946 DAN201
D910 1S2076
IC902 µPD4011C
IC901 HD38842A23
MATRIX 0
MATRIX 1
PAUSE OUT (Hi)
M BRAKE ON (Hi)
M BRAKE OFF (Hi)
T BR (Hi)
W2 (Hi)
W1 (Hi)
V2 (Hi)
V1 (Hi)
U2 (Hi)
U1 (Hi)
CLK
V disp
CGR
V GG
V DD
SYNC
TEST 2
TEST 1
Vss
TAPE SENSE (Lo)
LOAD SENSE (Lo)
PAUSE SENSE (Lo)
PLAY OUT (Hi)
AUDIO DUB OUT (Hi)
REC OUT (Hi)
MONITOR CUT (Hi)
REMOTE (Lo)
REC SW (Hi)
CYL ON (Hi)
LOADING (Hi)
W3 (Hi)
SAVE (Hi)
REWIND SW (Hi)
AUDIO DUB SW (Hi)
F.FWD SW (Hi)
PLAY SW (Hi)
OVER DISCHARGE (Hi)
TROUBLES (Hi)
EXT. BATT. SOURCE (EXT Hi)
STOP SW (Hi)
D936 DAN201
D961 DAN201
D948 1S2076
D968 1S2076
D934 1S2076
D939 V06A
D938 1S2076
D942 HZ-9A
D963 1S2076
D943 1S2076
D915 1S2076
D913 DAN201
D908 DAN201
D907 1S2076
D967 1S2076
D947 1S2076
IC907 TA4184
10V REG
TIMER SET
RELAY DRIVE
D916 HZ-7C-1
D912 HZ-15-3
D962 1S2076
D917 DAN201
IC908 TA4177
D935 1S2076
D940 DAN201
S914 CASSETTE SWITCH
Ⓓ REVERSE
Ⓕ CYLINDER ON
Ⓒ PAUSE
Ⓔ LOAD
Ⓖ CYLINDER LOCK
Ⓟ EE (H)
Ⓚ START (H)
Ⓛ 12V
Ⓜ GND
Ⓝ 9V
Ⓞ M9V
TO SERVO
S905 ON OFF
D904 ERB-81
D905 V06A
D903 V06A
F901 4A
D906 V06A
L901
S902
S901
Q901 2SC2021R
Q902 2SC2021R
Q903 2SC2021
Q920 2SA844
PG910 CN910
1 10V
2 AUDIO DUB
3 AUDIO DUB INDI
4 RECORD INDI
5 PLAY INDI
6 RECORD
7 GND
PG909 CN909
8 5V
7 PAUSE 2
6 PAUSE POWER
5 PAUSE 1
4 STOP
3 F.FWD
2 PLAY
1 REWIND
S915 SAFETY TAB SWITCH
S907 DUB
S908 REC
S909 REW
S910 PLAY
S911 FF

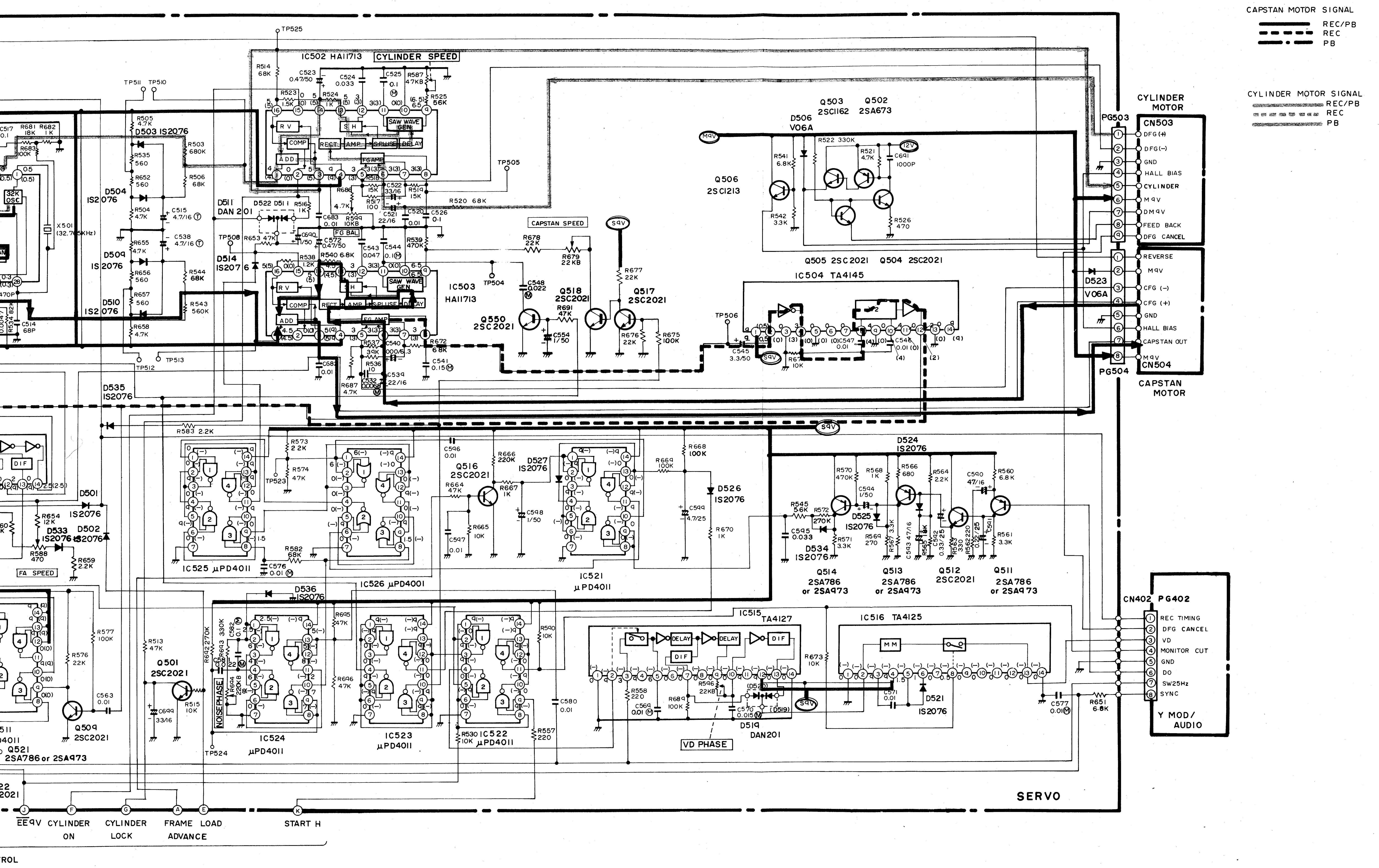
(SYSTEM CONTROL BLOCK)


IC903 μPD4001C
IC902 μPD4011C
IC901 HD38842A23
IC907 TA4184
IC908 TA4177
IC911 TA4174
IC912 TA4175
IC913 TA4167
Q910 2SC2021R
Q912 2SA715C
Q913 2SC1162C
Q914 2SA715C
Q901 2SC2021R
Q902 2SC2021R
Q903 2SC2021
Q920 2SA844
Q921 2SC2021
Q204 2SC2021R
Q904 2SC2021R
Q905 2SC2021R
Q906 2SC2021R
D904 ERB-81
D905 V06A
D903 V06A
D906 V06A
D907 1S2076
D947 1S2076
D962 1S2076
D967 1S2076
D910 1S2076
D908 DAN201
D913 DAN201
D932 DAN201
D936 DAN201
D940 DAN201
D946 DAN201
D961 DAN201
D917 DAN201
D944 HZ-7C-1
D916 HZ-7C-1
D912 HZ-15-3
D942 HZ-9A
D921~D927 LN81CPHLX7
D REVERSE
F CYLINDER ON
C PAUSE
E LOAD
G CYLINDER LOCK
P EE (H)
K START(H)
L 12V
M GND
N S9V
O M9V
TO SERVO
10V REG
TIMER SET
RELAY DRIVE
J902 EXTERNAL BATTERY
S905
L901
PG908: 4 12V / 3 5V / 2 GND / 1 REC9V — To CAMERA CN908
PG919 CN919 R901 3M DEW SENSOR
CN409: 7 BATTERY / 6 TUNER 12V / 5 AC(H) / 4 CHARGE A / 3 CHARGE B / 2 TIMER / 1 VTR ON — TO Y MOD./AUDIO PG409
PG903 CN903 J901 DC JACK
PG920: 1 12V / 2 GND / 3 SAVE / 4 GND / 5 S 9V / 6 M9V — To SWITCHING REGULATOR CN916
H REC 9V / I REC 9V / A FRAME ADVANCE / B TRACKING — TO SERVO
PG917 CN917 DN6838
PG907: 13 S 9V / 12 10V / 11 GND / 10 — / 9 REMOTE / 8 TRACKING / 7 FRAME ADVANCE / 6 REW / 5 FF / 4 PLAY / 3 REC / 2 STOP / 1 PAUSE — To CAMERA CN907
CN404: 1 REC 9V / 2 REC 9V / 3 REC (H) / 4 GND / 5 DUB (H) / 6 S 9V / 7 EE (H) / 8 EE 9V — TO Y MOD./AUDIO PG404
J EE9V TO SERVO
J903 CAMERA PAUSE JACK
S914 CASSETTE SWITCH
PG910 CN910: 1 10V / 2 AUDIO DUB / 3 AUDIO DUB INDI / 4 RECORD INDI / 5 PLAY INDI / 6 RECORD / 7 GND
PG909 CN909: 8 5V / 7 PAUSE 2 / 6 PAUSE POWER / 5 PAUSE 1 / 4 STOP / 3 F.FWD / 2 PLAY / 1 REWIND
PG914 CN914 S915 SAFETY TAB SWITCH
S907 DUB / S908 REC / S909 REW / S910 PLAY / S911 FF / S912 STOP / S913 PAUSE
D921 DUB / D922 REC / D923 REW / D924 PLAY / D925 FF / D926 STOP / D927 PAUSE
MATRIX 0 / MATRIX 1 / PAUSE OUT / M BRAKE ON / M BRAKE OFF / T BR / W2 / W1 / V2 / V1 / U2 / U1 / CLK / Vdisp / CGR / V GG / V DD / SYNC / TEST 2 / TEST 1 / Vss
TAPE SENSE / LOAD SENSE / PAUSE SENSE / PLAY OUT / AUDIO DUB OUT / REC OUT / MONITOR CUT / REMOTE / REC SW / CYL ON / LOADING / W3 / SAVE / REWIND SW / AUDIO DUB SW / F.FWD SW / PLAY SW / OVER DISCHARGE / TROUBLES / EXT.BATT SOURCE / STOP SW
TP901
RESET

(SYSTEM CONTROL BLOCK)

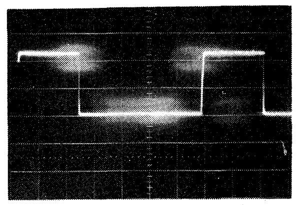
SERVO


CN502
PG502
CTL·H
CYL CN501 PG501
TACH·H
IC501 HA11711
IC502 HA11713 CYLINDER SPEED
IC503 HA11713
IC504 TA4145
IC506 HA1406
IC512 TA4139
IC509 μPD4011
IC510 μPD4011
IC511 μPD4011
IC525 μPD4011
IC526 μPD4001
IC521 μPD4011
IC524 μPD4011
IC523 μPD4011
IC522 μPD4011
IC515 TA4127
X501 (32.768KHz)
T PRESET
REC TIMING
D.LOCK
C.LOCK
CH2 PHASE
CH1 PHASE
CAPSTAN SPEED
FA SPEED
FG BAL
NOSEPHASE
VD PHASE
SAMPLE HOLD
PULSE GEN
M.M
REG
VSS
CTL REC AMP
CTL AMP
32K OSC
FG AMP
FG COUNTER
CAPSTAN
SAMPLE
CYL FFz
F.F.
N AMP
P AMP
R V
S H
SAW WAVE GEN
COMP
RECT
AMP
S.PULSE
DELAY
ADD
DIF
Q501 2SC2021
Q503 2SC1162
Q505 2SC2021
Q506 2SC1213
Q509 2SC2021
Q514 2SA786 or 2SA973
Q515 2SC2021
Q516 2SC2021
Q517 2SC2021
Q518 2SC2021
Q521 2SA786 or 2SA973
Q550 2SC2021
Q222 2SC2021
D506 V06A
D511 DAN201
D519 DAN201
TP501
TP502
TP504
TP505
TP506
TP508
TP510
TP511
TP512
TP513
TP520
TP523
TP524
TP525
SW25
REC9V
M9V
S9V
12V
TRACKING
REVERSE
REC9V
PAUSE
REC9V
M9V
12V
GND
S9V
EE H
EE9V
CYLINDER ON
CYLINDER LOCK
FRAME ADVANCE
LOAD
START H
TO SYSTEM CONTROL

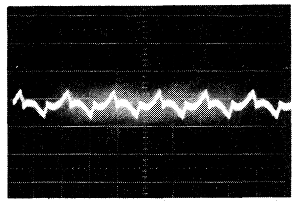

CAPSTAN MOTOR SIGNAL
REC/PB
REC
PB
CYLINDER MOTOR SIGNAL
REC/PB
REC
PB
IC502 HA11713
CYLINDER SPEED
IC503 HA11713
CAPSTAN SPEED
IC504 TA4145
Q503 2SC1162
Q502 2SA673
D506 V06A
Q506 2SC1213
Q505 2SC2021
Q504 2SC2021
Q518 2SC2021
Q517 2SC2021
Q550 2SC2021
CYLINDER MOTOR
PG503
CN503
DFG(+)
DFG(−)
GND
HALL BIAS
CYLINDER
M9V
DM9V
FEED BACK
DFG CANCEL
REVERSE
M9V
CFG (−)
CFG (+)
GND
HALL BIAS
CAPSTAN OUT
M9V
D523 V06A
PG504
CN504
CAPSTAN MOTOR
IC525 µPD4011
IC526 µPD4001
IC521 µPD4011
IC524 µPD4011
IC523 µPD4011
IC522 µPD4011
Q516 2SC2021
D524 1S2076
D526 1S2076
D527 1S2076
Q514 2SA786 or 2SA973
Q513 2SA786 or 2SA973
Q512 2SC2021
Q511 2SA786 or 2SA973
Q501 2SC2021
Q509 2SC2021
Q521 2SA786 or 2SA973
IC515 TA4127
IC516 TA4125
DELAY
DIF
MM
VD PHASE
NOISEPHASE
D519 DAN201
D521 1S2076
CN402 PG402
REC TIMING
DFG CANCEL
VD
MONITOR CUT
GND
DO
SW25Hz
SYNC
Y MOD/ AUDIO
FA SPEED
X501 (32.768KHz)
SERVO
EE9V
CYLINDER ON
CYLINDER LOCK
FRAME ADVANCE
LOAD
START H
ROL

Continued from page 60.

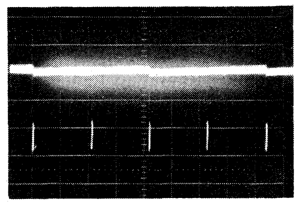
IC501 ㉗ REC
2V/T=40msec



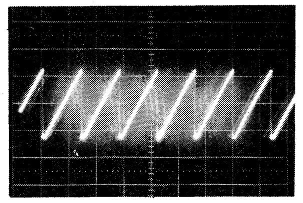
IC502 ⑤ PB/REC
50mV/5ms.div.



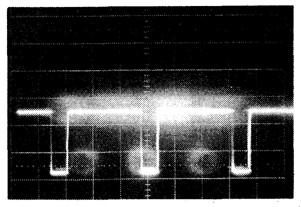
IC502 ⑫ PB/REC
50mV/T=10msec



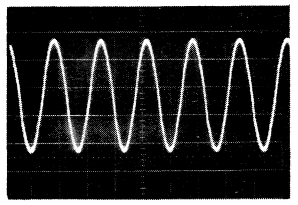
IC503 ⑪ PB/REC
2V/252Hz



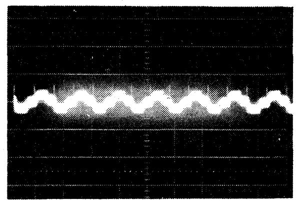
IC501 ㉗ PB
2V/T=40msec



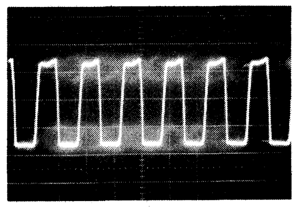
IC502 ⑥ PB/REC
100mV/100Hz



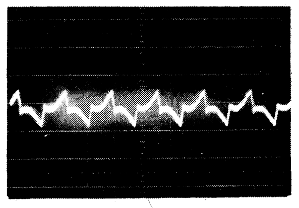
IC503 ⑤ PB/REC
50mV/1ms.div.



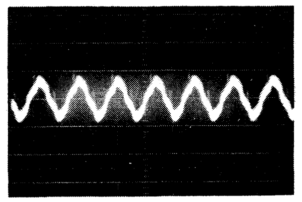
IC501 ㉘ REC
0.2V/32kHz



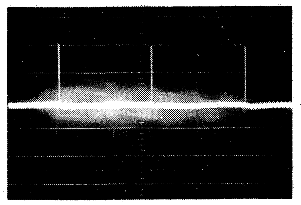
IC502 ⑦ PB/REC
50mV/5ms.div.



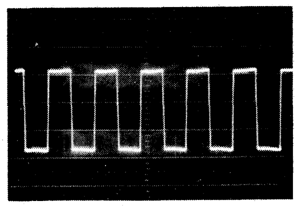
IC503 ⑥ PB/REC
50mV/1ms.div.



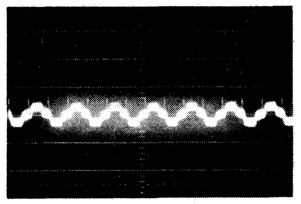
IC502 ① PB/REC
50mV/10ms.div.



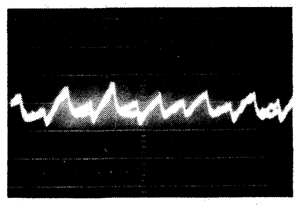
IC502 ⑧ PB/REC
50mV/100Hz



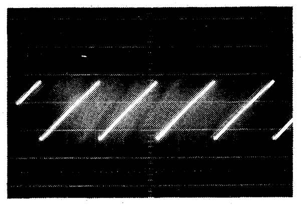
IC503 ⑦ PB/REC
50mV/1ms.div.



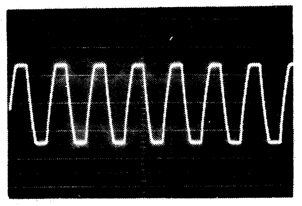
IC502 ③ PB/REC
50mV/5ms.div.

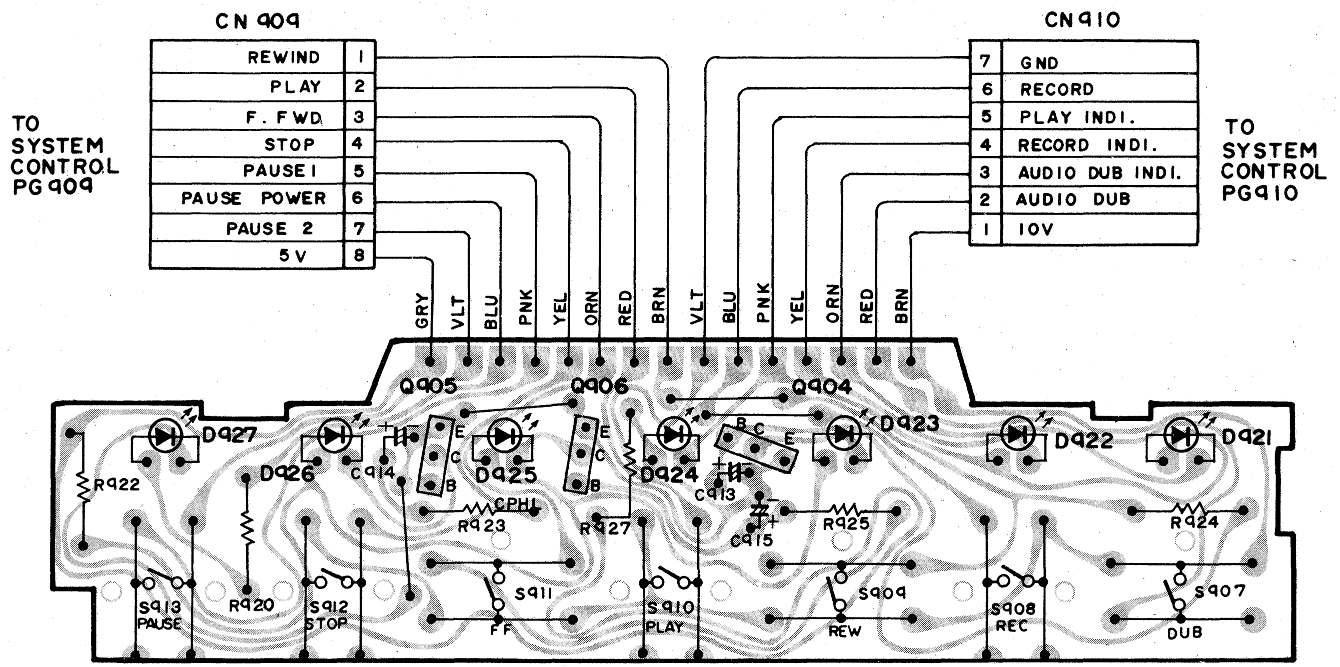


IC502 ⑪ PB/REC
2V/100Hz



IC503 ⑧ PB/REC
0.5V/252Hz




CN 909
REWIND 1
PLAY 2
F. FWD 3
STOP 4
PAUSE 1 5
PAUSE POWER 6
PAUSE 2 7
5V 8
TO SYSTEM CONTROL PG909
CN910
7 GND
6 RECORD
5 PLAY INDI.
4 RECORD INDI.
3 AUDIO DUB INDI.
2 AUDIO DUB
1 10V
TO SYSTEM CONTROL PG910
GRY
VLT
BLU
PNK
YEL
ORN
RED
BRN
VLT
BLU
PNK
YEL
ORN
RED
BRN
Q905
Q906
Q904
D927
D926
D925
D924
D923
D922
D921
E
C
B
C914
C913
C915
CPH1
R922
R923
R927
R925
R924
R920
S913 PAUSE
S912 STOP
S911 FF
S910 PLAY
S909 REW
S908 REC
S907 DUB

SWITCH P.C.B

IC501

28	0.3(0.3)	1	0.5(0.5)
27	1.5(3)	2	3(0.5)
26	0.3(0.1)	3	3(0.5)
25	6(5)	4	3(1)
24	6(6)	5	6(6)
23	5(5)	6	0(0)
22	2.5(2.5)	7	0(0)
21	0(0)	8	0.3(0.3)
20	5(9)	9	9(9)
19	4.5(4.5)	10	2(1)
18	0.5(0.5)	11	3(6)
17	0.5(0.5)	12	5(9)
16	2.5(2.5)	13	4.5(0.5)
15	2(2)	14	5.5(5.5)

IC502

8	3(3)	9	6.5(6.5)
7	3(3)	10	0(0)
6	3(3)	11	3(3)
5	3(3)	12	3(3)
4	9(9)	13	5(5)
3	5(5)	14	5(5)
2	0(0)	15	0(0)
1	4(4)	16	5(5)

IC503

8	3(3)	9	6.5(6.5)
7	3(3)	10	0(0)
6	3(3)	11	3(3)
5	3(3)	12	3(3)
4	9(9)	13	4.5(4.5)
3	5(5)	14	5(5)
2	0(0)	15	0(0)
1	4.5(4.5)	16	5(5)

IC506

1	2(2)
2	—
3	0.5(0.5)
4	0(0)
5	0(0)
6	0.5(0.5)
7	4(4)
8	7(7)

IC504

14	13	12	11	10	9	8
9(9)	0(0)	2(2)	0(0)	4(4)	0(0)	4(4)
7	6	5	4	3	2	1
0(0)	0(0)	0(0)	3(3)	0(0)	0.5(0.5)	9(9)

IC509

7	0(0)	8	9(9)
6	0(0)	9	9(9)
5	9(9)	10	0(0)
4	9(9)	11	9(9)
3	9(9)	12	9(9)
2	0(0)	13	0(0)
1	0(0)	14	9(9)

IC510

7	0(0)	8	9(9)
6	9(9)	9	0(0)
5	9(9)	10	9(9)
4	0(0)	11	0(0)
3	0(0)	12	9(9)
2	9(9)	13	9(9)
1	9(9)	14	9(9)

IC511

7	0(0)	8	0(0)
6	0(0)	9	0(0)
5	0(0)	10	9(9)
4	9(9)	11	0(0)
3	0(0)	12	9(9)
2	9(9)	13	9(9)
1	9(9)	14	9(9)

IC512

14	13	12	11	10	9	8	7	6	5	4	3	2	1
2.5(2.5)	0(9)	2(9)	0(0)	2(9)	0(0)	9(9)	5(5)	9(9)	0(0)	9(9)	0(0)	0.5(0.5)	0(0)

IC515

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(−)	0(−)	9(−)	9(−)	0(−)	0(−)	0(−)	0(−)	0(−)	6(−)	9(−)	3(−)	9(−)	0(−)

IC516

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(−)	0(−)	0(−)	0(−)	0(−)	0(−)	0.5(−)	0(−)	1(−)	1.5(−)	9(−)	9(−)	0(−)	0(−)

IC521

7	0(−)	8	0(−)
6	0(−)	9	0(−)
5	0(−)	10	9(−)
4	9(−)	11	9(−)
3	0(−)	12	0(−)
2	9(−)	13	0(−)
1	9(−)	14	9(−)

IC522

7	0(−)	8	9(−)
6	9(−)	9	0(−)
5	0(−)	10	9(−)
4	9(−)	11	0(−)
3	9(−)	12	9(−)
2	0(−)	13	9(−)
1	9(−)	14	9(−)

IC523

7	0(−)	8	9(−)
6	9(−)	9	9(−)
5	9(−)	10	0(−)
4	0(−)	11	0(−)
3	0(−)	12	9(−)
2	9(−)	13	9(−)
1	9(−)	14	9(−)

IC524

1	2	3	4	5	6	7
2.5(−)	2.5(−)	6(−)	4(−)	6(−)	8(−)	0(−)
14	13	12	11	10	9	8
9(−)	5(−)	5(−)	8(−)	2(−)	7(−)	7(−)

IC525

7	0(−)	8	1.5(−)
6	9(−)	9	0(−)
5	9(−)	10	9(−)
4	0(−)	11	0(−)
3	9(−)	12	9(−)
2	0(−)	13	9(−)
1	0(−)	14	9(−)

IC526

7	0(−)	8	1.5(−)
6	9(−)	9	9(−)
5	0(−)	10	0(−)
4	0(−)	11	9(−)
3	0(−)	12	0(−)
2	6(−)	13	0(−)
1	6(−)	14	9(−)

Q501

B	0(−)
C	0(−)
E	0(−)

Q502

B	12(−)
C	1(−)
E	12(−)

Q503

B	1(−)
C	12(−)
E	9(−)

Q504

B	0.6(−)
C	12(−)
E	0(−)

Q505

B	0.6(−)
C	0.6(−)
E	0(−)

Q506

B	3(−)
C	9(−)
E	2.5(−)

Q509

B	0.6(−)
C	0(0)
E	0(0)

Q511

B	0.5(−)
C	1.5(−)
E	7(−)

Q512

B	1.5(−)
C	9(−)
E	1(−)

Q513

B	7.7(−)
C	2(−)
E	9(−)

Q514

B	9(−)
C	0.5(−)
E	9(−)

Q515

B	0(−)
C	9(−)
E	0(−)

Q516

B	0(−)
C	8(−)
E	0(−)

Q517

B	0(−)
C	0.6(−)
E	0(−)

Q518

B	0.6(−)
C	0(0)
E	0(0)

Q521

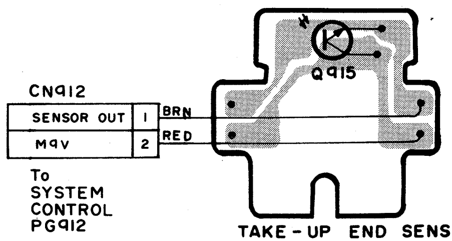
B	8.5(9)
C	9(0)
E	9(9)

Q522

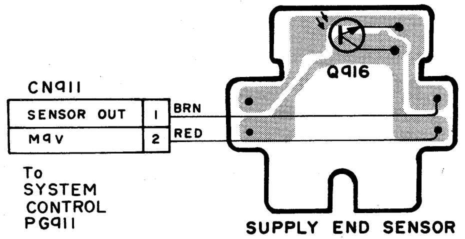
B	0.6(0)
C	0(9)
E	0(0)

Q550

B	0(−)
C	2(−)
E	0(−)


Q915
CN912
SENSOR OUT 1
M9V 2
BRN
RED
To SYSTEM CONTROL PG912

TAKE-UP END SENSOR P.C.B


Q916
CN911
SENSOR OUT 1
M9V 2
BRN
RED
To SYSTEM CONTROL PG911

SUPPLY END SENSOR P.C.B

IC901

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
0(0)	0(0)	0(0)	0(0)	10(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	10(10)	0(0)	10(10)	0(0)	0(10)	0(0)	10(0)	10(10)	10(10)	10(10)
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
10(10)	10(10)	10(10)	10(10)	0(0)	0(0)	—	0(0)	—	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	—	—

IC902

8	9	10	11	12	13	14
10(10)	10(10)	0(0)	10(10)	0(0)	0(0)	10(10)
7	6	5	4	3	2	1
0(0)	10(10)	10(10)	0(0)	0(0)	0(0)	10(10)

IC903

14	10(10)	1	10(10)
13	0(0)	2	10(10)
12	10(10)	3	0(0)
11	0(0)	4	10(10)
10	10(10)	5	0(0)
9	0(0)	6	0(0)
8	0(0)	7	0(0)

IC907

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(0)	0.7(0.7)	1.3(1.3)	0(0)	11.3(11.3)	11.3(11.3)	11.3(11.3)	0(0)	10(10)	0(0)	—	0(10)	12(12)	7.4(7.4)

IC908

10	9	8	7	6	5	4	3	2	1
0(0)	12(12)	0(0)	5(5)	0(0)	5(5)	0(0)	5(5)	0(0)	0(0)

IC909

1	0(0)	7	0(0)
2	0(0)	8	0(0)
3	11.4(11.4)	9	12(12)
4	0(0)	10	12(12)
5	0(0)	11	0(0)
6	11.4(11.4)	12	0(0)

IC911

14	8.4(8.4)	7	8.4(8.4)
13	0(0)	6	0(0)
12	0(0)	5	0(0)
11	0(0)	4	0(0)
10	0(0)	3	8.4(8.4)
9	8.4(8.4)	2	—
8	8.4(8.4)	1	—

IC912

14	8.4(8.4)	7	7.7(7.7)
13	0(0)	6	0(0)
12	0(0)	5	0(0)
11	0(0)	4	0(0)
10	8.4(8.4)	3	7.7(7.7)
9	0(0)	2	0(0)
8	0(0)	1	0(0)

IC910

1	2	3	4	5	6	7	8	9	10	11	12	13	14
0(0)	—	0(0)	—	—	12(12)	5(5)	10(10)	—	11.4(11.4)	—	11.4(11.4)	0(0)	4.3(4.3)

IC913

14	13	12	11	10	9	8	7	6	5	4	3	2	1
10(10)	1(1)	1(1)	0.6(0.6)	—	1(1)	1(1)	10(10)	—	—	10(10)	0(0)	—	0(0)

Q901

B	1.3(1.3)
C	10(10)
E	0.7(0.7)

Q902

B	0.7(0.7)
C	0(0)
E	0(0)

Q903

B	0(0)
C	10(10)
E	0(0)

Q904

B	0(0)
C	5(5)
E	0(0)

Q905

B	0(0)
C	5(5)
E	0(0)

Q906

B	0(0)
C	5(5)
E	0(0)

Q907

B	12(12)
C	0(0)
E	12(12)

Q908

B	0(0)
C	11.4(11.4)
E	0(0)

Q909

B	0(0)
C	11.4(11.4)
E	0(0)

Q910

B	0.6(0.6)
C	0(0)
E	0(0)

Q911

B	0(0)
C	0(0)
E	0(0)

Q912

B	8.4(8.4)
C	0(0)
E	8.4(8.4)

Q913

B	0(0)
C	0(0)
E	0(0)

Q914

B	8.4(8.4)
C	0(0)
E	0(0)

Q915

B	—
C	9(9)
E	0(0)

Q916

B	—
C	9(9)
E	0(0)

Q920

B	9(9)
C	0(0)
E	0(0)

Q921

B	0(0)
C	9(9)
E	0(0)

Q922

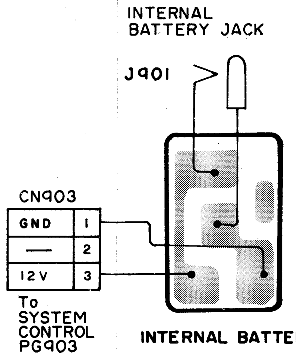
B	0(0)
C	8.4(8.4)
E	0(0)

Q923

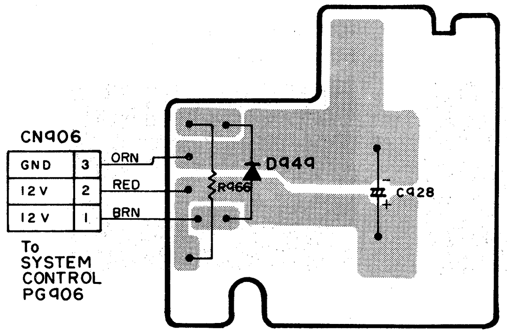
B	8.4(8.4)
C	8.4(8.4)
E	7.7(7.7)

Q924

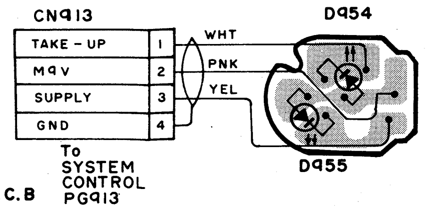
B	0(0)
C	10(10)
E	0(0)


INTERNAL BATTERY JACK
J901
CN903
GND 1
— 2
12V 3
To SYSTEM CONTROL PG903

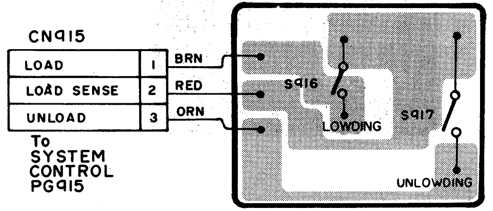
INTERNAL BATTERY JACK P.C.B


CN906
GND 3
12V 2
12V 1
ORN
RED
BRN
R966
D949
C928
To SYSTEM CONTROL PG906

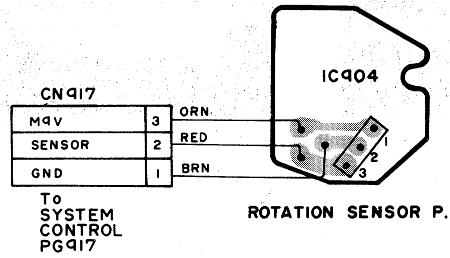
CAPACITOR P.C.B


CN913
TAKE-UP 1
M9V 2
SUPPLY 3
GND 4
WHT
PNK
YEL
D954
D955
To SYSTEM CONTROL PG913

TAPE SENSOR LAMP P.C.B


CN915
LOAD 1
LOAD SENSE 2
UNLOAD 3
BRN
RED
ORN
S916
S917
LOWDING
UNLOWDING
To SYSTEM CONTROL PG915

LOADING SW P.C.B


IC904
CN917
M9V 3
SENSOR 2
GND 1
ORN
RED
BRN
1
2
3
To SYSTEM CONTROL PG917

ROTATION SENSOR P.C.B

CN402

To
AUDIO
PG402

REC TIMING	1	BRN
DFG CANCEL	2	RED
VD	3	ORN
MONITOR CUT	4	YEL
GND	5	PNK
DO	6	BLU
SW25Hz	7	VLT
SYNC	8	GRY

CN404

To
AUDIO
PG404

REC 9V	1	BLU
REC 9V	2	BLK
REC(H)	3	RED
GND	4	ORN
DUB(H)	5	PNK
S9V	6	WHT
EE (H)	7	YEL
EE 9V	8	BRN

CN409

To
AUDIO
PG409

VTR ON	1	BRN
TIMER	2	RED
CHARGE B	3	ORN
CHARGE A	4	YEL
AC (H)	5	PNK
TUNER12V	6	BLU
BATTERY	7	VLT

PG909

TO
SWITCH
CN909

REWIND	1
PLAY	2
F.F	3
STOP	4
PAUSE 1	5
PAUSE POWER	6
PAUSE 2	7
5V	8

PG910

TO
SWITCH
CN910

10V	1
AUDIO DUB	2
AUDIO DUB INDI.	3
RECORD INDI.	4
PLAY INDI.	5
RECORD	6
GND	7

PG911

TO
SUPPLY END SENSOR
CN911

SENSOR	1
M9V	2

PG912

TO
TAKE-UP END SENSOR
CN912

SENSOR	1
M9V	2

PG913

TO
TAPE SENSOR LAMP
CN913

TAKE-UP LED	1
M9V	2
SUPPLY LED	3
GND	4

PG914

TO
SAFTY TAB SW
CN914

REC IN	1
RECORD	2

PG915

TO
LOADING SW
CN915

LOADING	1
LOAD SENSE	2
UNLOADING	3

PG916

TO
PAUSE SENSOR SW
CN916

PAUSE	1
PAUSE	2

PG917

TO
ROTATION SENSOR
CN917

GND	1
SENSOR	2
M9V	3

PG918

TO
COUNTER SW
CN918

COUNTER	1
M9V	2

PG919

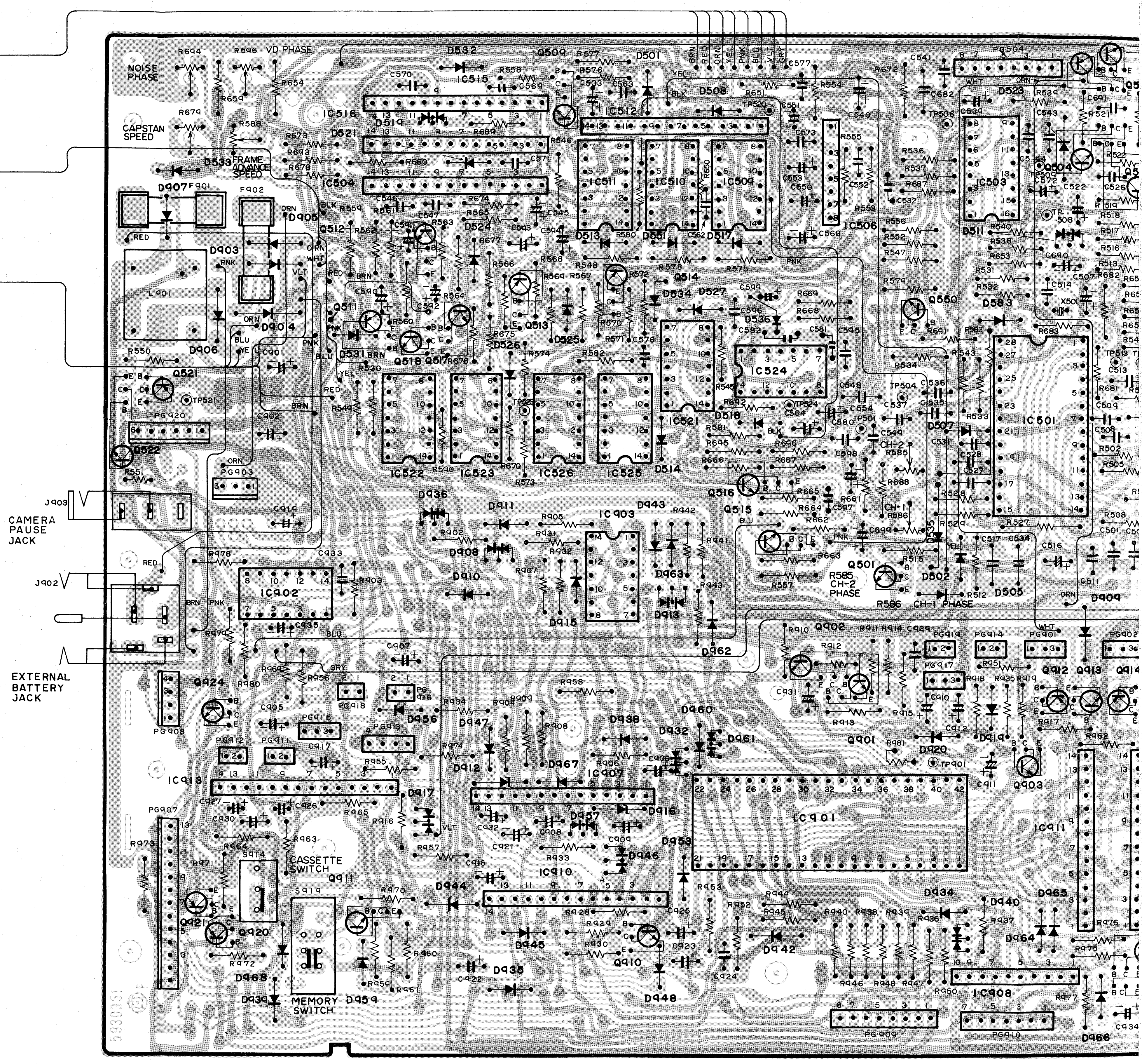
TO
DEW SENSOR
CN919

GND	1
DEW	2

PG920

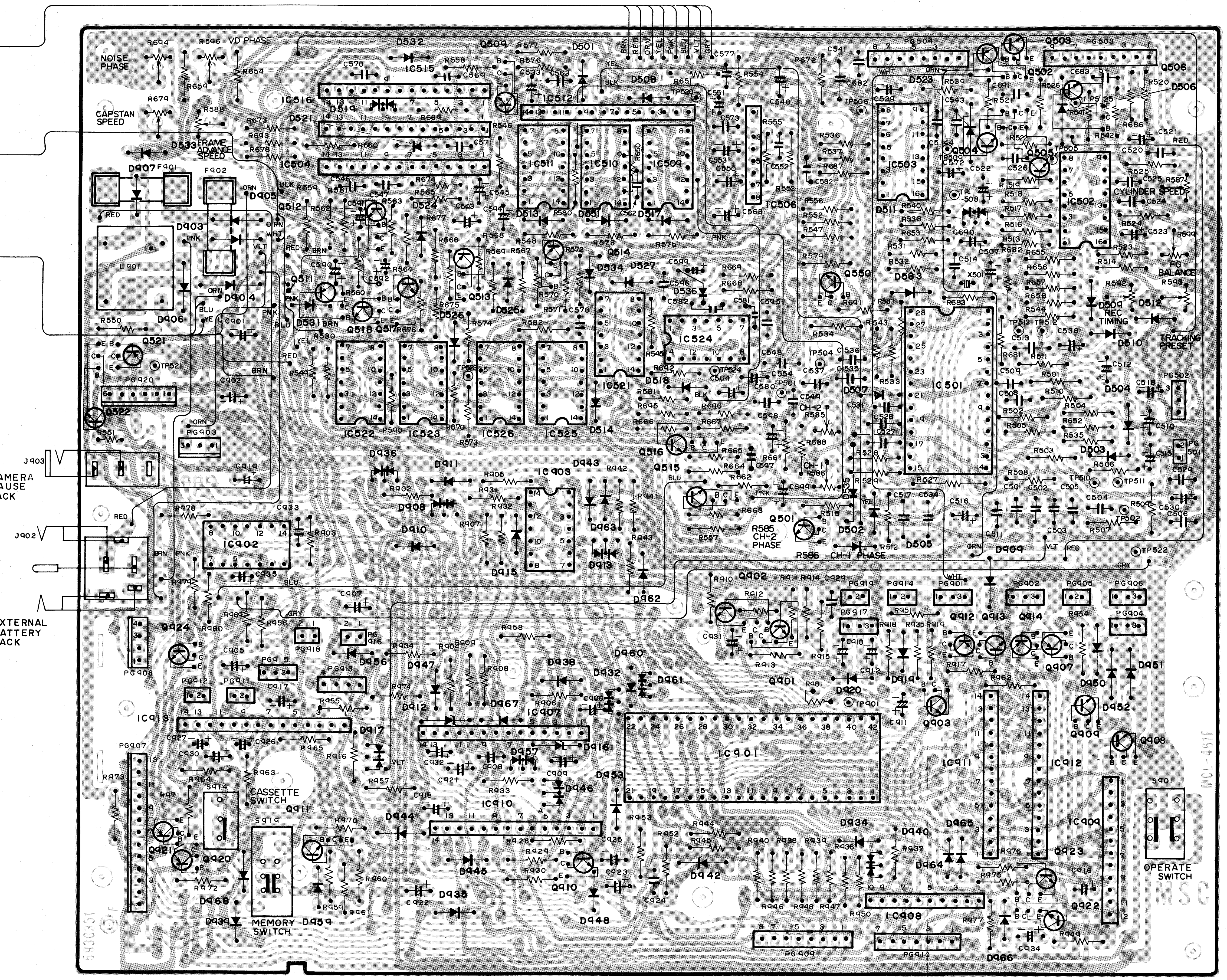
TO
SWITCHING REGULATOR
CN920

12V	1
GND	2
SAVE	3
GND	4
S9V	5
M9V	6



NOISE PHASE
VD PHASE
CAPSTAN SPEED
FRAME ADVANCE SPEED
CAMERA PAUSE JACK
J903
J902
EXTERNAL BATTERY JACK
CASSETTE SWITCH
MEMORY SWITCH
CH-2 PHASE
CH-1 PHASE
IC515
IC516
IC512
IC504
IC511
IC510
IC509
IC506
IC503
IC524
IC521
IC522
IC523
IC526
IC525
IC501
IC902
IC903
IC913
IC907
IC910
IC901
IC911
IC908
L901
F901
F902
PG504
PG920
PG903
PG908
PG909
PG910
5930351

SERVO/ SYSTE


NOISE PHASE
VD PHASE
CAPSTAN SPEED
FRAME ADVANCE SPEED
CYLINDER SPEED
FG BALANCE
REC TIMING
TRACKING PRESET
CH-2 PHASE
CH-1 PHASE
CASSETTE SWITCH
MEMORY SWITCH
OPERATE SWITCH
J903
AMERA
AUSE
ACK
J902
XTERNAL
ATTERY
ACK
IC501
IC502
IC503
IC504
IC506
IC509
IC510
IC511
IC512
IC515
IC516
IC521
IC522
IC523
IC524
IC525
IC526
IC901
IC902
IC903
IC907
IC908
IC909
IC910
IC911
IC912
IC913
PG501
PG502
PG503
PG504
PG901
PG902
PG903
PG904
PG905
PG906
PG907
PG908
PG909
PG910
PG911
PG912
PG913
PG914
PG915
PG916
PG917
PG918
PG919
PG920
S901
S914
S919
MCL-461F
MSC
5930351

SERVO/SYSTEM CONTROL P.C.B

PG501

1	TACH PULSE
2	GND

TO
CYL TACH HEAD
CN501

PG502

1	CTL PULSE
2	GND
3	GND

TO
CTL HEAD
CN502

PG503

1	DFG (+)
2	DFG (−)
3	GND
4	HALL BIAS
5	CYLINDER OUT
6	M9V
7	12V OR 9V
8	FEED BACK
9	DFG CANCEL

TO
CYLINDER MOTOR
CN503

PG504

1	REVERSE
2	9V
3	CFG (−)
4	CFG (+)
5	GND
6	HALL BIAS
7	CAPSTAN OUT
8	M9V

TO
CAPSTAN MOTOR
CN504

PG901

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

TO
LOADING MOTOR
CN901

PG902

1	GND
2	MOTOR DRIVE
3	MOTOR DRIVE

TO
REEL MOTOR
CN902

PG903

1	GND
2	——
3	12V

TO
DC JACK
CN903

PG904

1	SOL. DRIVE
2	12V
3	SOL. DRIVE

TO
MAIN BRAKE
CN904

PG905

1	12
2	SOL. DRIVE

TO
TAKE-UP BRAKE
CN905

PG906

1	12V
2	12V
3	GND

TO
CAPACITOR
CN906

PG907

1	PAUSE
2	STOP
3	REC
4	PLAY
5	FF
6	REW
7	FRAME ADVANCE
8	TRACKING
9	REMOTE
10	——
11	GND
12	10V
13	S9V

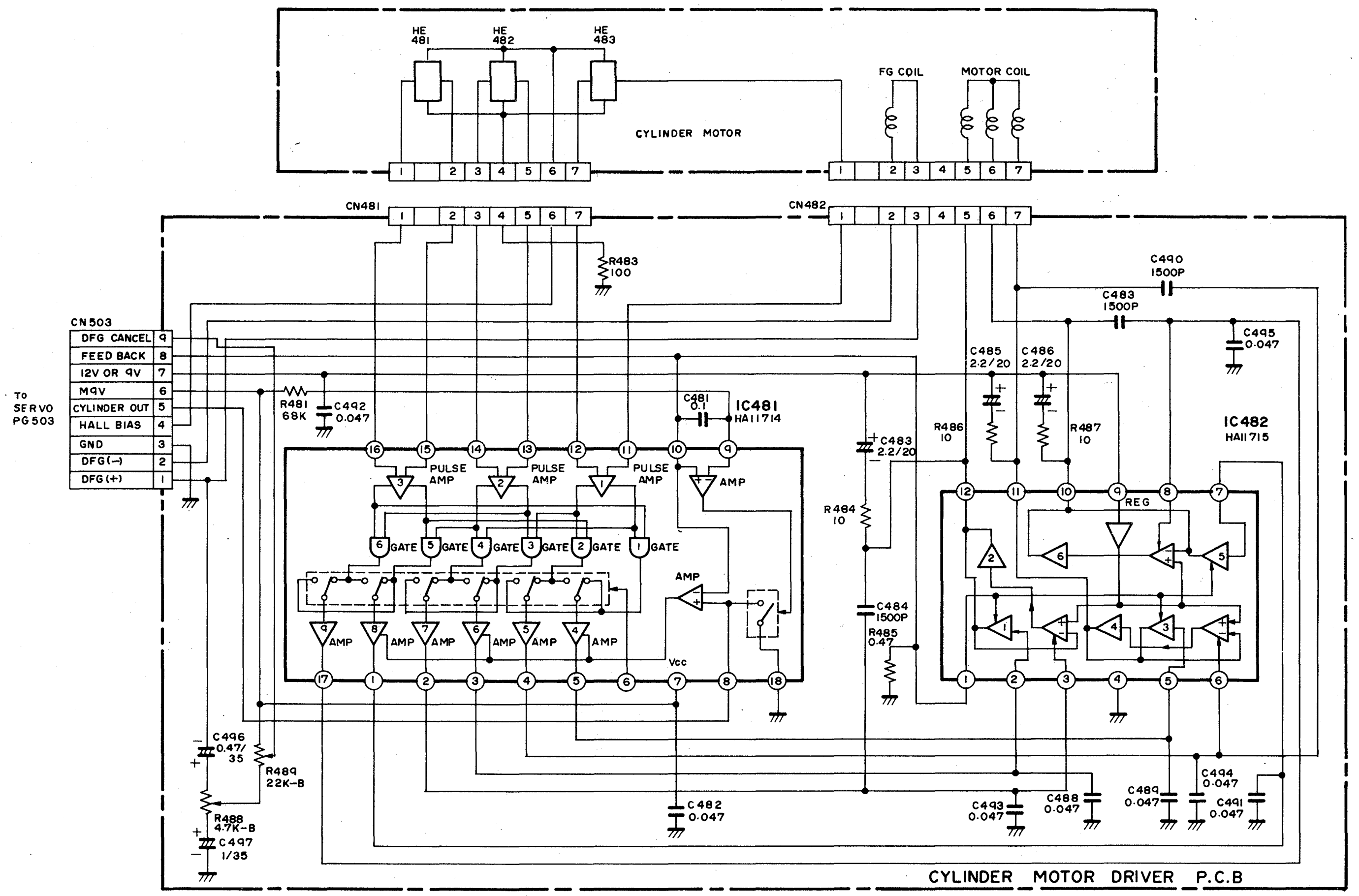
TO
CONNECTOR
CN907

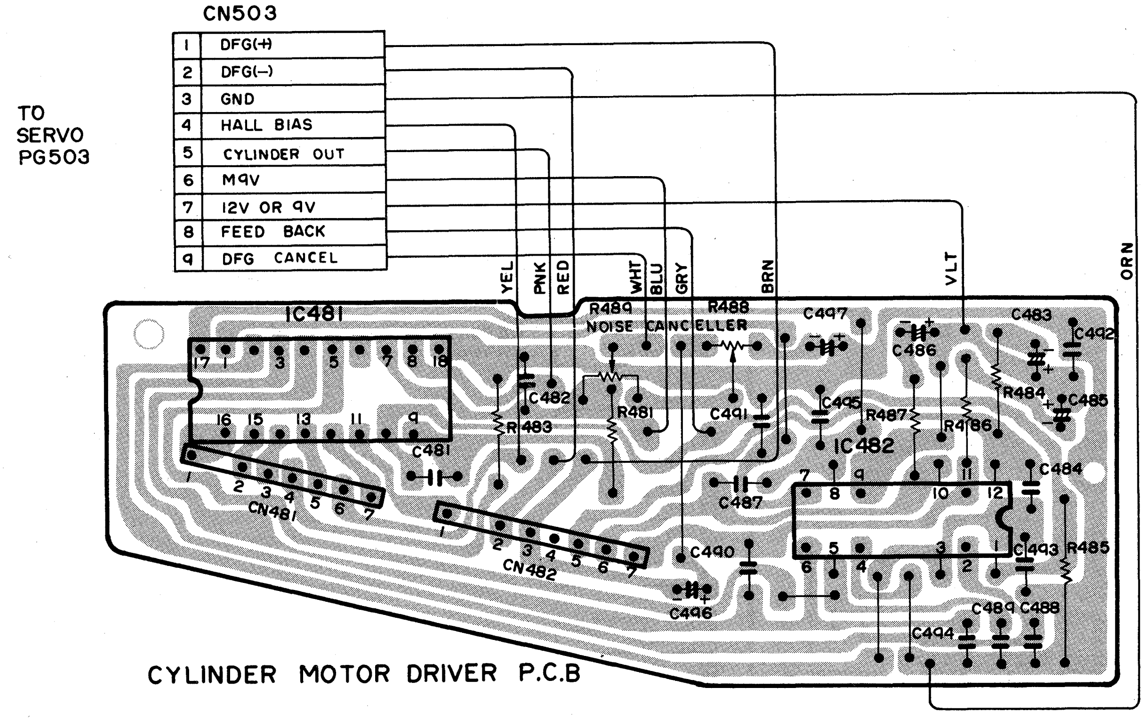
PG908

1	$\overline{\text{REC}}$ 9V
2	GND
3	5V
4	12V

TO
CONNECTOR
CN908

CYLINDER MOTOR DRIVER


HE 481
HE 482
HE 483
FG COIL
MOTOR COIL
CYLINDER MOTOR
CN481
CN482
R483 100
C490 1500P
C483 1500P
C495 0.047
CN503
DFG CANCEL 9
FEED BACK 8
12V OR 9V 7
M9V 6
CYLINDER OUT 5
HALL BIAS 4
GND 3
DFG(−) 2
DFG(+) 1
To SERVO PG503
R481 68K
C492 0.047
C481 0.1
IC481 HA11714
PULSE AMP
GATE
AMP
Vcc
C485 2.2/20
C486 2.2/20
C483 2.2/20
R486 10
R487 10
R484 10
C484 1500P
R485 0.47
IC482 HA11715
REG
C496 0.47/35
R489 22K-B
R488 4.7K-B
C497 1/35
C482 0.047
C493 0.047
C488 0.047
C489 0.047
C494 0.047
C491 0.047
CYLINDER MOTOR DRIVER P.C.B


CN503
1 DFG(+)
2 DFG(−)
3 GND
4 HALL BIAS
5 CYLINDER OUT
6 M9V
7 12V OR 9V
8 FEED BACK
9 DFG CANCEL
TO SERVO PG503
YEL
PNK
RED
WHT
BLU
GRY
BRN
VLT
ORN
IC481
R489 NOISE CANCELLER
R488
C497
C486
C483
C492
C482
R481
R483
C491
C481
C495
R487
R484
R486
C485
IC482
C487
C484
CN481
CN482
C490
C496
C493
R485
C494
C489
C488

CYLINDER MOTOR DRIVER P.C.B

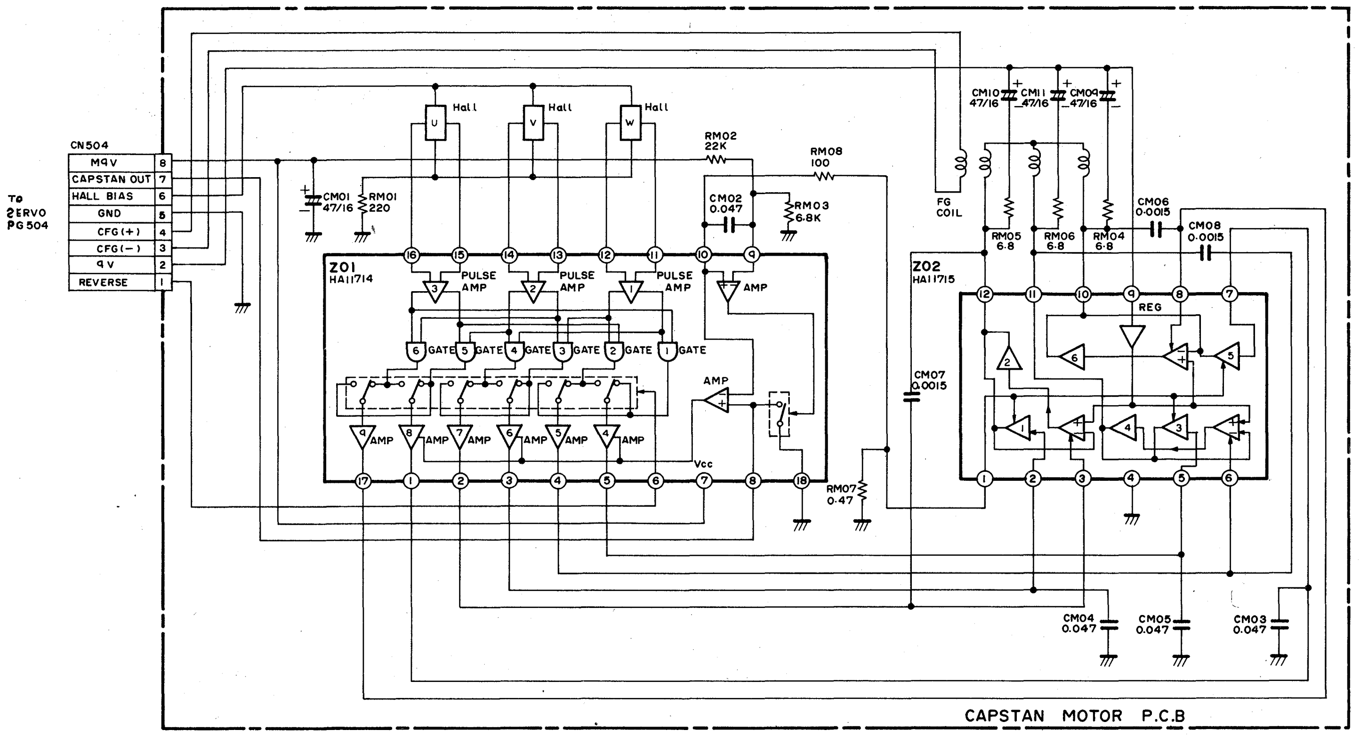
IC481

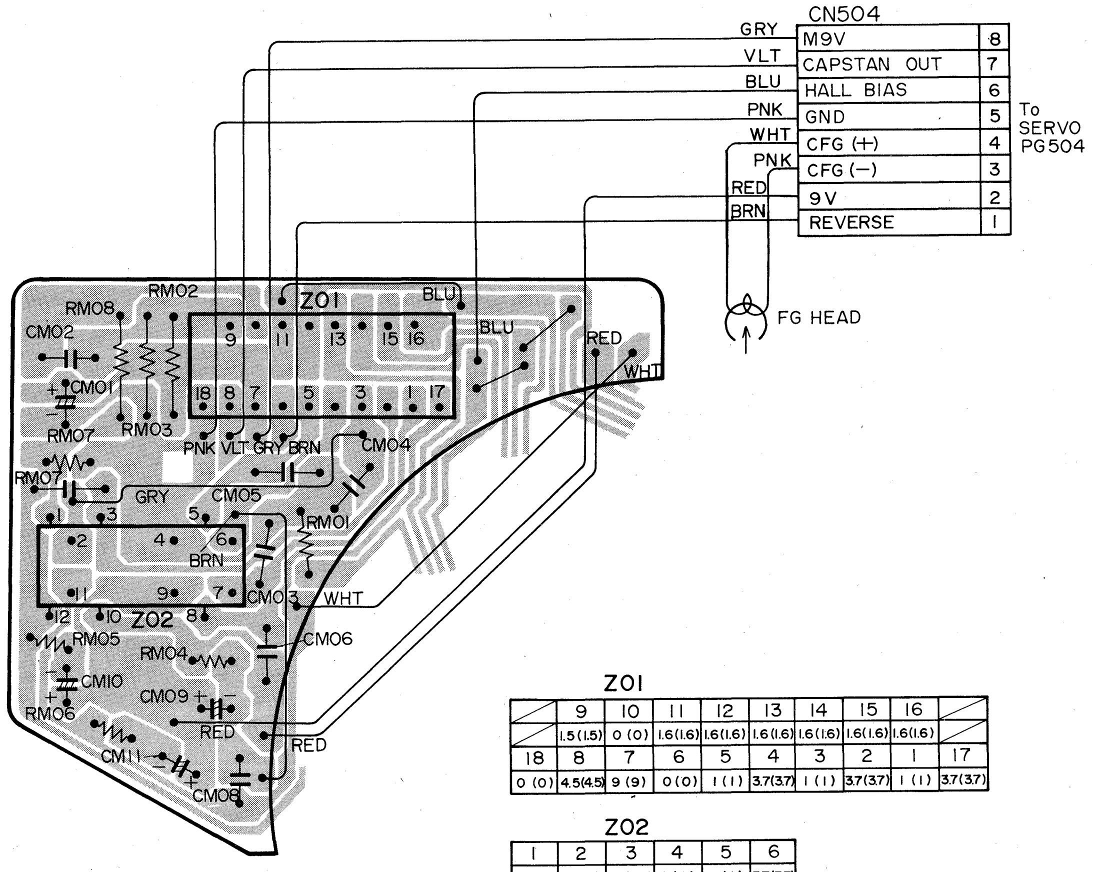
17	1	2	3	4	5	6	7	8	18
3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	0 (0)	9 (9)	4.5(4.5)	0(0)
	16	15	14	13	12	11	10	9	
	1.6(1.6)	1.6 (1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	0.1(0.1)	1 (1)	

IC482

7	8	9	10	11	12
1 (1)	3.7(3.7)	9 (9)	5 (5)	5 (5)	5 (5)
6	5	4	3	2	1
3.7(3.7)	1 (1)	0 (0)	3.7(3.7)	1 (1)	0 (0)

CAPSTAN MOTOR


CN504
M9V 8
CAPSTAN OUT 7
HALL BIAS 6
GND 5
CFG(+) 4
CFG(−) 3
9V 2
REVERSE 1
To SERVO PG504
Hall
CM01 47/16
RM01 220
RM02 22K
RM08 100
CM02 0.047
RM03 6.8K
Z01 HA11714
PULSE AMP
GATE
AMP
Vcc
RM07 0.47
CM10 47/16
CM11 47/16
CM09 47/16
FG COIL
RM05 6.8
RM06 6.8
RM04 6.8
CM06 0.0015
CM08 0.0015
Z02 HA11715
REG
CM07 0.0015
CM04 0.047
CM05 0.047
CM03 0.047
CAPSTAN MOTOR P.C.B


CN504
GRY M9V 8
VLT CAPSTAN OUT 7
BLU HALL BIAS 6
PNK GND 5
WHT CFG (+) 4
PNK CFG (−) 3
RED 9V 2
BRN REVERSE 1
To SERVO PG504
FG HEAD
RM08
RM02
Z01
BLU
CM02
CM01
RM03
RM07
RED
WHT
PNK VLT GRY BRN
CM04
GRY
CM05
RM01
BRN
Z02
CM03
CM06
RM05
RM04
CM10
CM09
RM06
CM11
CM08

CAPSTAN MOTOR P.C.B

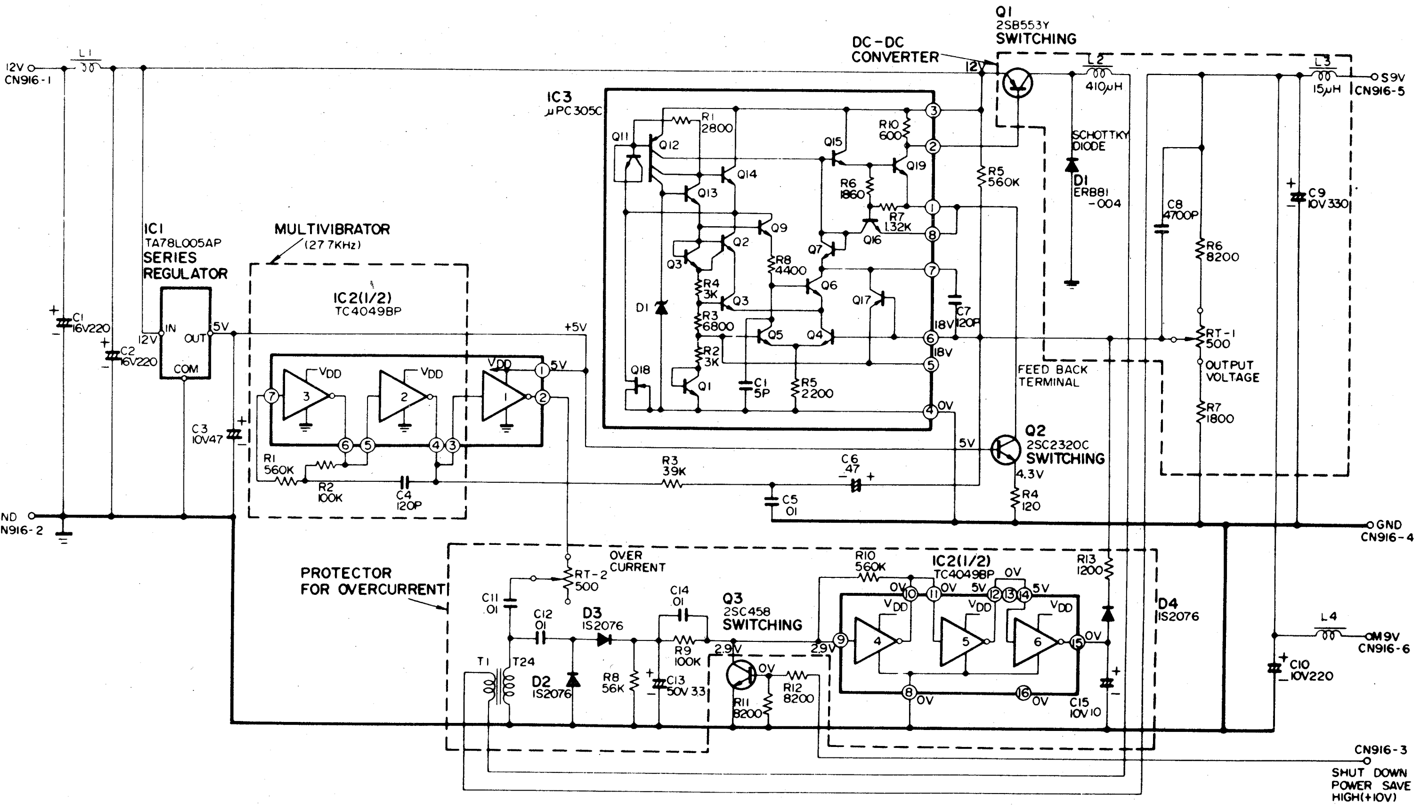
Z01

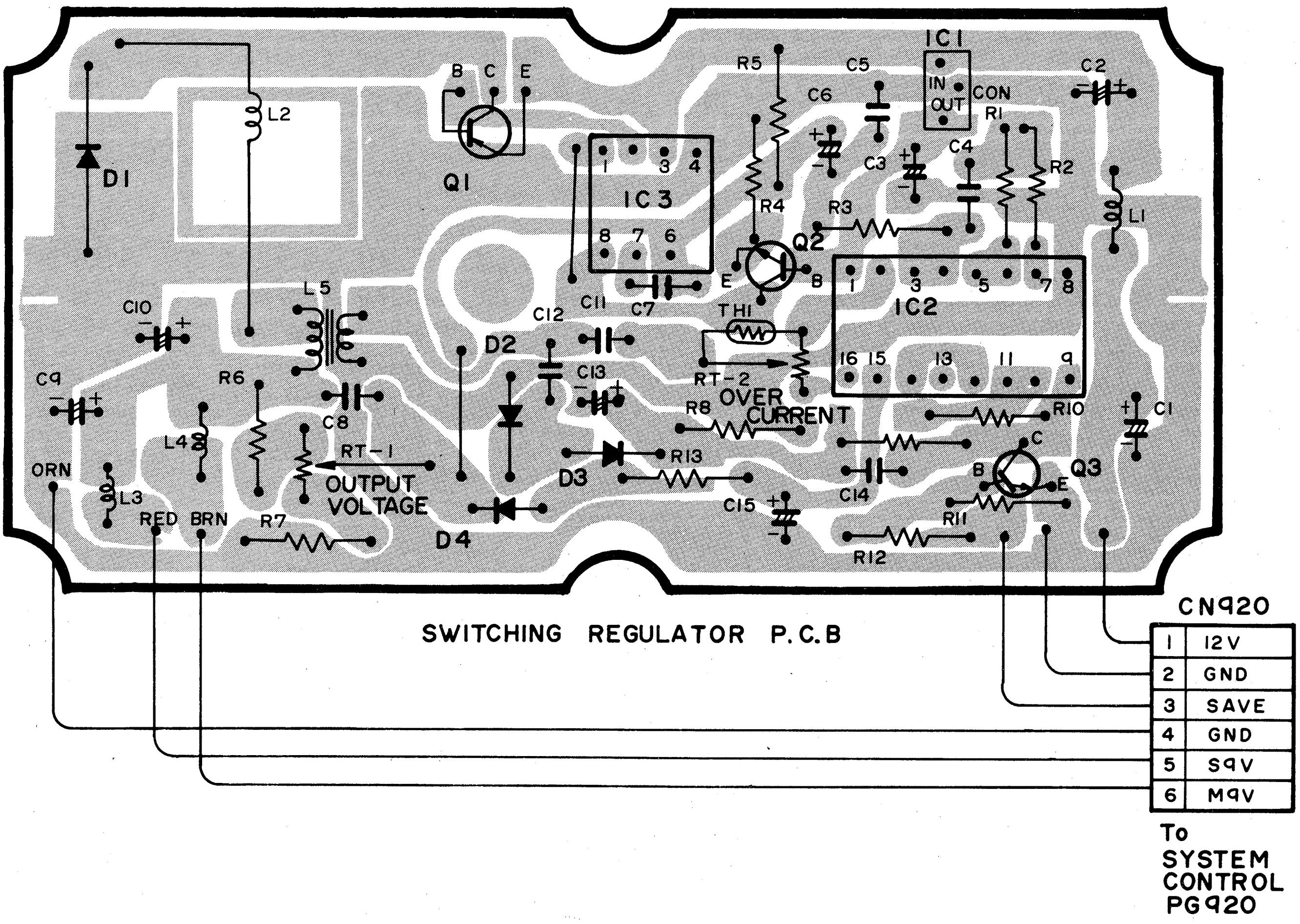
	9	10	11	12	13	14	15	16	
	1.5(1.5)	0 (0)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	1.6(1.6)	
18	8	7	6	5	4	3	2	1	17
0 (0)	4.5(4.5)	9 (9)	0 (0)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)	1 (1)	3.7(3.7)

Z02

1	2	3	4	5	6
0 (0)	1 (1)	3.7(3.7)	0 (0)	1 (1)	3.7(3.7)
12	11	10	9	8	7
5 (5)	5 (5)	5 (5)	9 (9)	3.7(3.7)	1 (1)

SWITCHING REGULATOR


12V CN916-1
L1
GND CN916-2
C1 16V220
C2 16V220
IC1 TA78L005AP SERIES REGULATOR
IN
OUT
COM
12V
5V
C3 10V47
MULTIVIBRATOR (27.7KHz)
IC2(1/2) TC4049BP
VDD
R1 560K
R2 100K
C4 120P
+5V
R3 39K
C5 .01
C6 47
IC3 μPC305C
Q11
Q12
R1 2800
Q13
Q14
Q3
Q2
Q9
R8 4400
R4 3K
R3 6800
R2 3K
D1
Q18
Q1
C1 5P
R5 2200
Q5
Q4
Q6
Q17
Q7
Q16
Q15
Q19
R10 600
R6 1860
R7 1.32K
C7 120P
18V
0V
DC-DC CONVERTER
Q1 2SB553Y SWITCHING
L2 410μH
SCHOTTKY DIODE
D1 ERB81-004
R5 560K
FEED BACK TERMINAL
Q2 2SC2320C SWITCHING
5V
4.3V
R4 120
C8 4700P
R6 8200
RT-1 500
OUTPUT VOLTAGE
R7 1800
L3 15μH
S9V CN916-5
C9 10V330
GND CN916-4
L4
M9V CN916-6
C10 10V220
CN916-3 SHUT DOWN POWER SAVE HIGH(+10V)
PROTECTOR FOR OVERCURRENT
OVER CURRENT
RT-2 500
C11 .01
C12 .01
D3 1S2076
C14 .01
Q3 2SC458 SWITCHING
T1
T24
D2 1S2076
R8 56K
C13 50V33
R9 100K
R11 8200
R12 8200
2.9V
0V
R10 560K
IC2(1/2) TC4049BP
R13 1200
D4 1S2076
C15 10V10

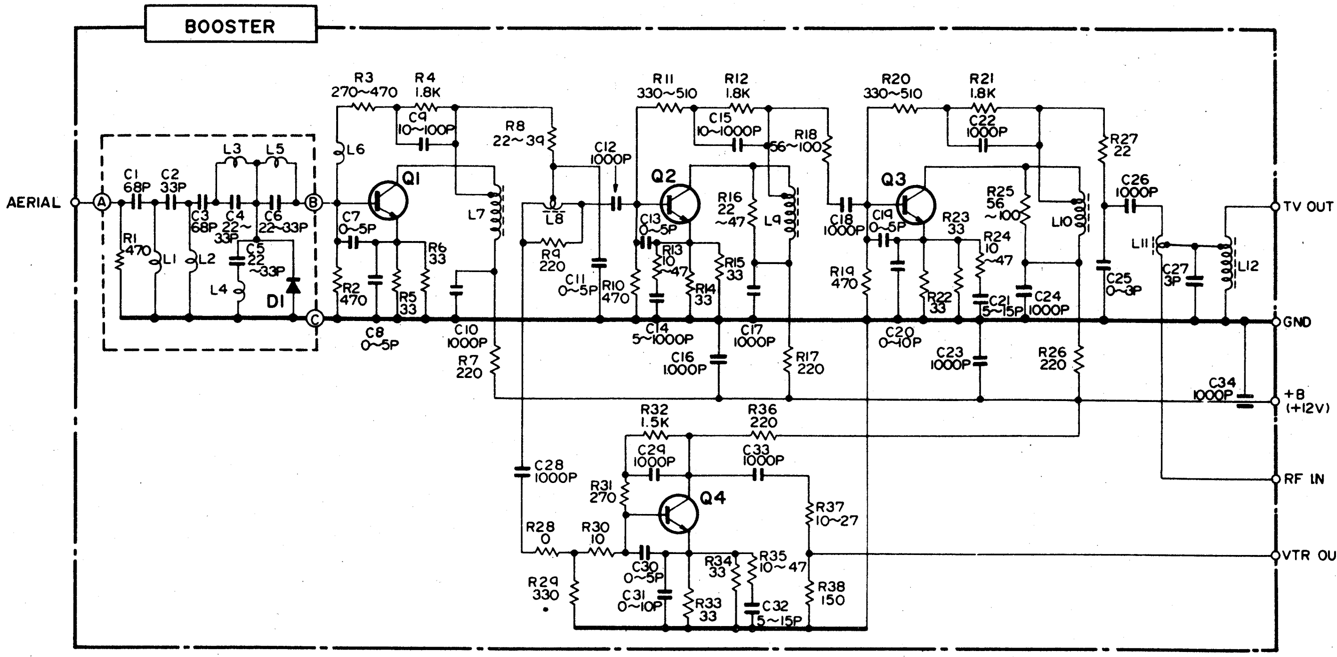

D1
L2
B C E
Q1
IC3
1 3 4
8 7 6
R5
C5
C6
C3
IC1
IN
OUT
CON
C2
R1
C4
R2
R4
R3
Q2
E
B
L1
IC2
1 3 5 7 8
16 15 13 11 9
C10
L5
C12
C11
C7
TH1
RT-2
OVER CURRENT
C9
R6
C8
D2
C13
R8
R10
C1
L4
RT-1
OUTPUT VOLTAGE
D3
R13
C14
Q3
B
C
E
ORN
L3
RED
BRN
R7
D4
C15
R11
R12
CN920
1 12V
2 GND
3 SAVE
4 GND
5 S9V
6 M9V
To SYSTEM CONTROL PG920

SWITCHING REGULATOR P.C.B

RF BOOSTER INTERNAL

Q1 ~ Q4 2SC2570 OR 2SC2753

D1 IS2473


BOOSTER
AERIAL
TV OUT
GND
+B (+12V)
RF IN
VTR OUT
Q1
Q2
Q3
Q4
D1

TUNER (ET-546) INTERNAL (For the UK model)

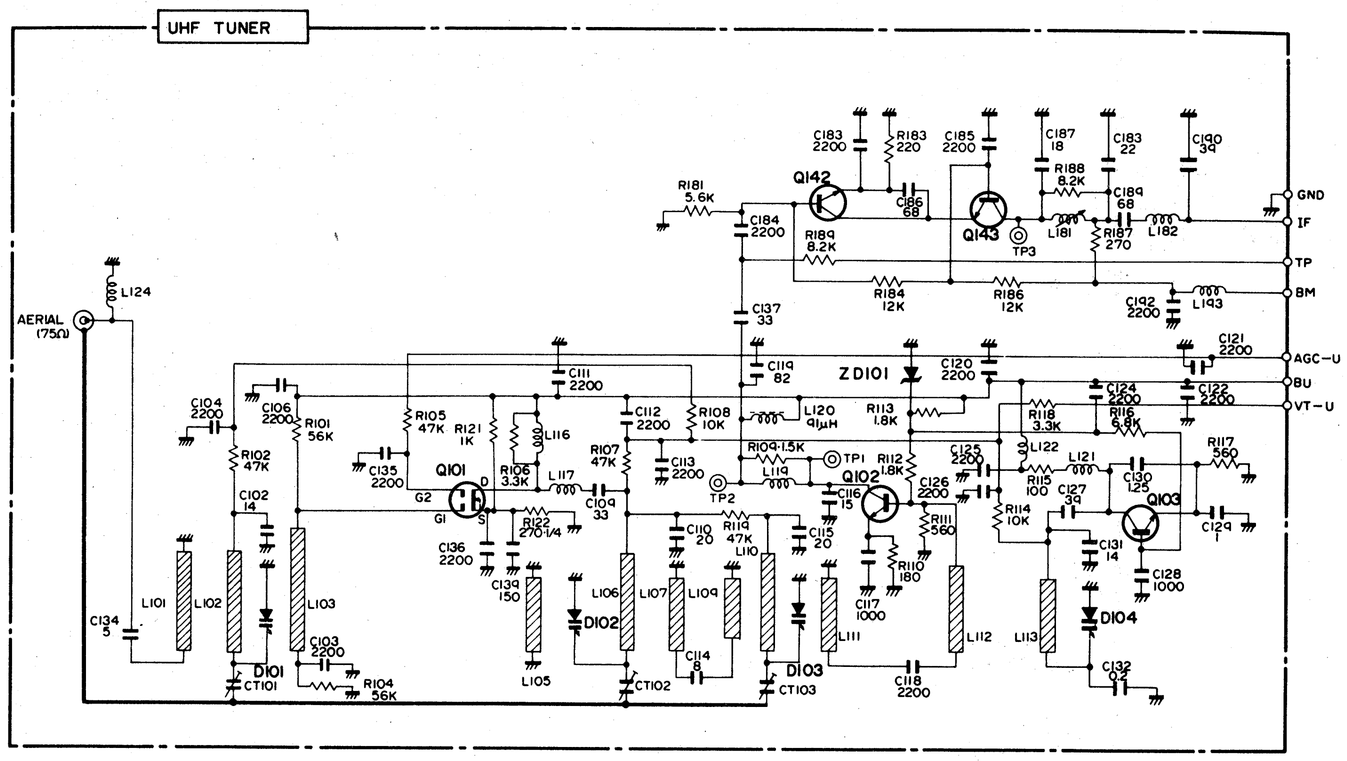
Q101 3SK83Y/3SK82Y

Q102 2SC2353B/2SC2466Y

Q103 2SC2468Y

Q142 2SC2469Y

Q143 2SC2469Y


UHF TUNER
AERIAL (75Ω)
GND
IF
TP
BM
AGC-U
BU
VT-U
Q101
Q102
Q103
Q142
Q143
ZD101
TP1
TP2
TP3

D101 ISV70

D102 ISV70

D103 ISV70

D104 ISV70

ZD101 HZ4C/HZ5A

RF CONVERTER INTERNAL

Q1 2SC536

D1 IS1926M

Q2 2SC1645

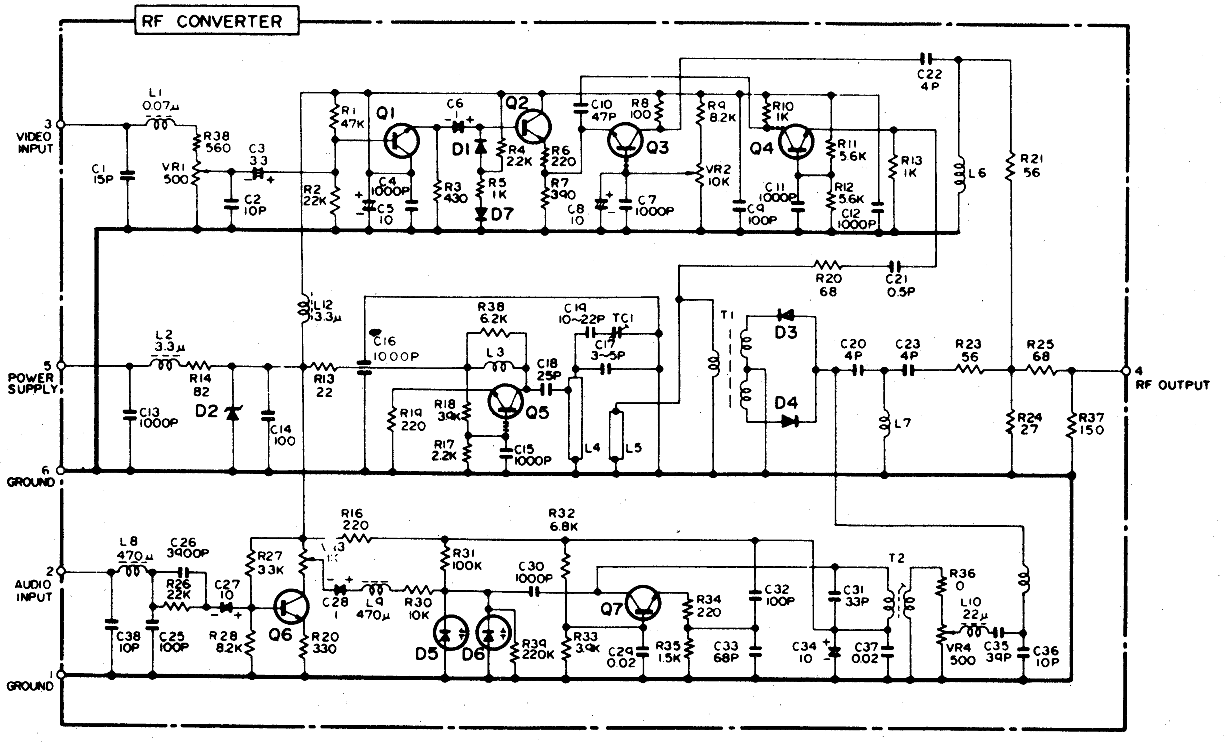
D2 RD8.2EB2

Q3 2SC1730

D3 1SS99

Q4 2SC1730

D4 1SS99


RF CONVERTER
3 VIDEO INPUT
5 POWER SUPPLY
6 GROUND
2 AUDIO INPUT
1 GROUND
4 RF OUTPUT
Q1
Q2
Q3
Q4
Q5
Q6
Q7
D1
D2
D3
D4
D5
D6
D7
T1
T2

Q5 2SC1730

D5 1S2688

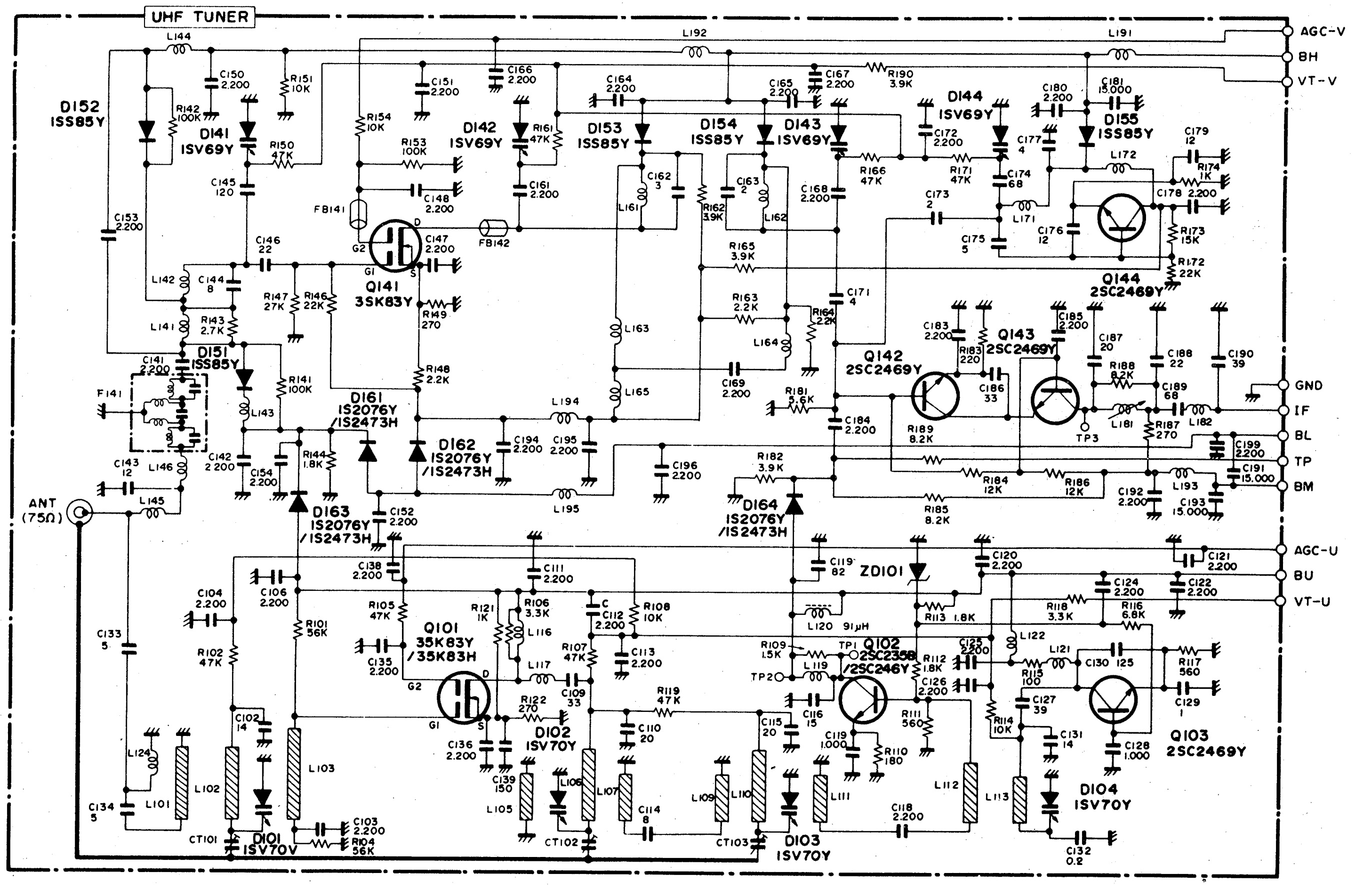
Q6 2SC536

D6 1S2688

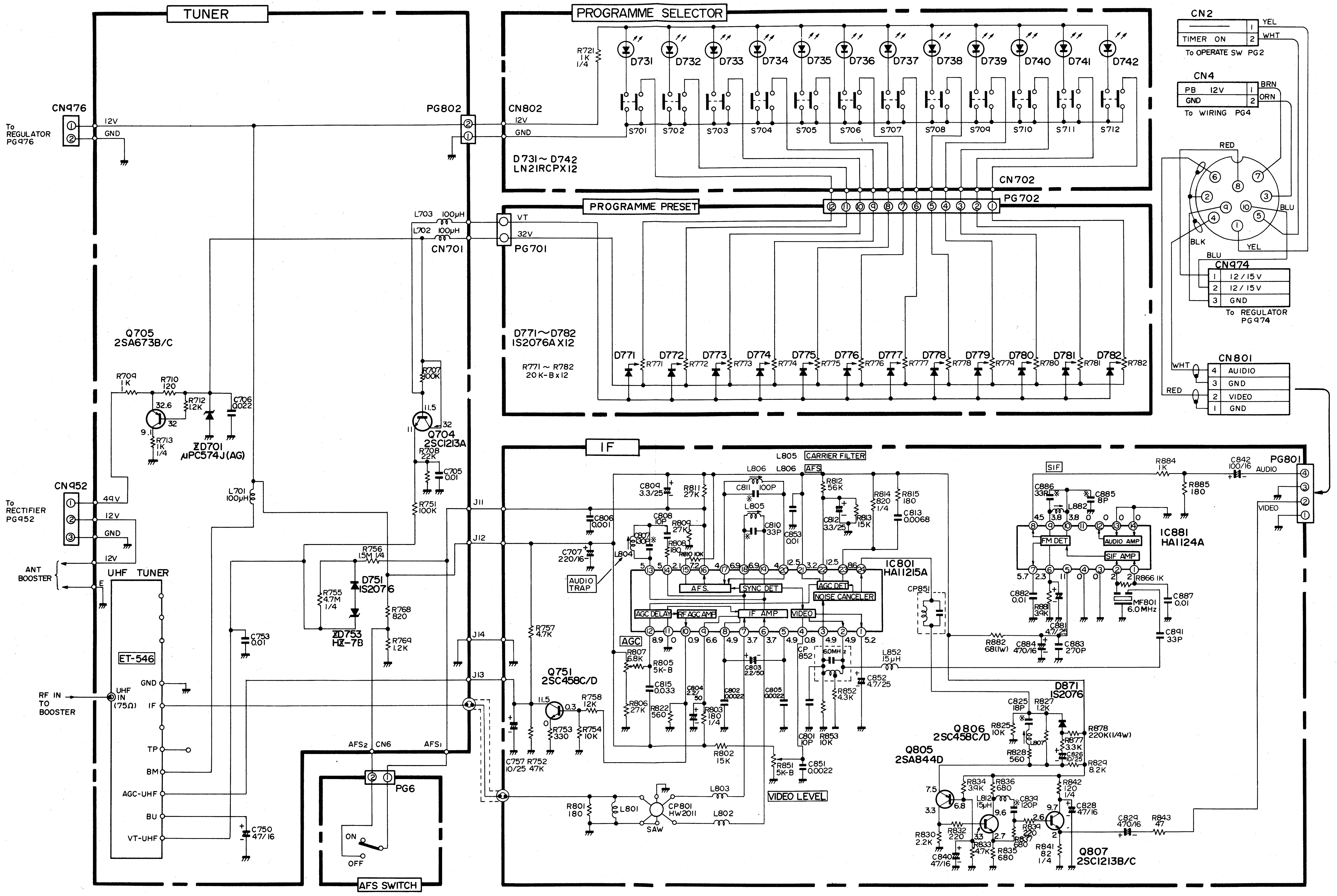
Q7 2SC1675

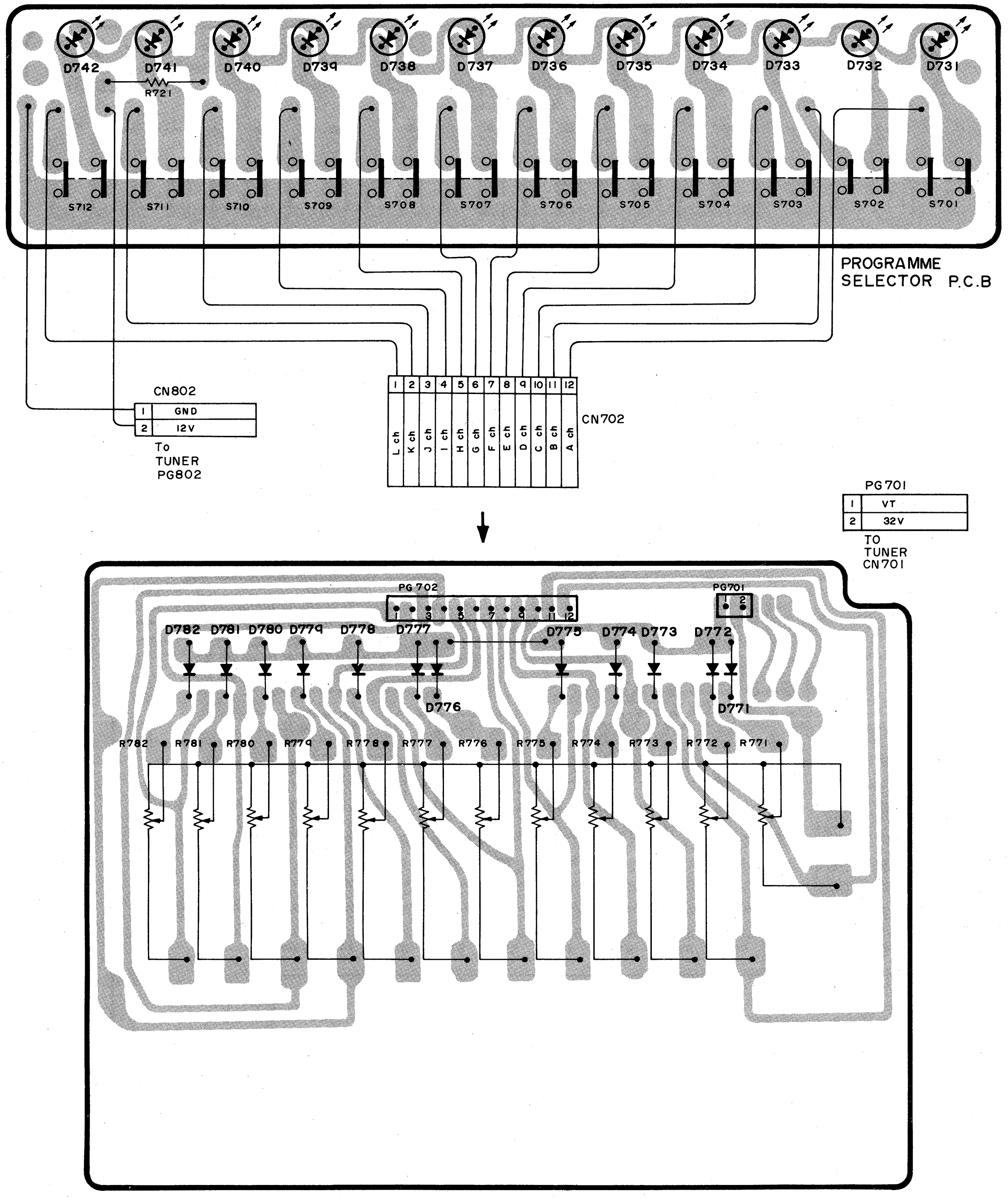
D7 VD 1221

TUNER (ET-541) INTERNAL (Except for the UK model)


UHF TUNER
AGC-V
BH
VT-V
GND
IF
BL
TP
BM
AGC-U
BU
VT-U
ANT (75Ω)
D152 1SS85Y
D141 ISV69Y
D142 ISV69Y
D153 1SS85Y
D154 1SS85Y
D143 ISV69Y
D144 ISV69Y
D155 1SS85Y
Q141 3SK83Y
Q144 2SC2469Y
Q142 2SC2469Y
Q143 2SC2469Y
D151 1SS85Y
D161 IS2076Y /IS2473H
D162 IS2076Y /IS2473H
D163 IS2076Y /IS2473H
D164 IS2076Y /IS2473H
ZD101
Q101 3SK83Y /3SK83H
Q102 2SC2353 /2SC2466Y
Q103 2SC2469Y
D101 ISV70Y
D102 ISV70Y
D103 ISV70Y
D104 ISV70Y

TUNER/IF/PROGRAMME SELECTOR/PROGRAMME PRESET (For the UK model)


TUNER
PROGRAMME SELECTOR
PROGRAMME PRESET
IF
CN976
To REGULATOR PG976
12V
GND
PG802
CN802
R721 1K 1/4
D731
D732
D733
D734
D735
D736
D737
D738
D739
D740
D741
D742
S701
S702
S703
S704
S705
S706
S707
S708
S709
S710
S711
S712
D731~D742 LN21RCPX12
CN702
PG702
CN2
TIMER ON
To OPERATE SW PG2
YEL
WHT
CN4
PB 12V
GND
To WIRING PG4
BRN
ORN
RED
BLU
BLK
YEL
CN974
12/15V
12/15V
GND
To REGULATOR PG974
L703 100μH
L702 100μH
CN701
VT
32V
PG701
D771~D782 1S2076AX12
R771~R782 20K-Bx12
D771
D772
D773
D774
D775
D776
D777
D778
D779
D780
D781
D782
CN801
AUDIO
GND
VIDEO
GND
WHT
RED
Q705 2SA673B/C
R709 1K
R710 120
R712 12K
C706 0.022
R713 1K 1/4
ZD701 μPC574J(AG)
R707 100K
Q704 2SC1213A
R708 22K
C705 0.01
R751 100K
CN952
To RECTIFIER PG952
49V
12V
GND
12V
ANT BOOSTER
E
UHF TUNER
L701 100μH
R756 1.5M 1/4
D751 1S2076
R755 4.7M 1/4
R768 820
ZD753 HZ-7B
R769 1.2K
C753 0.01
ET-546
GND
UHF IN (75Ω)
IF
RF IN TO BOOSTER
TP
BM
AGC-UHF
BU
VT-UHF
C750 47/16
AFS2
CN6
AFS1
PG6
ON
OFF
AFS SWITCH
J11
J12
J14
J13
R757 4.7K
Q751 2SC458C/D
R758 12K
R753 330
R754 10K
C757 10/25
R752 47K
C806 0.001
C707 220/16
AUDIO TRAP
L804
L805 CARRIER FILTER
L806
L806 AFS
C809 3.3/25
R811 27K
C811 100P
L805
C810 33P
C853 0.01
R812 56K
R814 820 1/4
R815 180
C813 0.0068
C812 3.3/25
R813 15K
C808 10P
R809 27K
C807 300P
R808 180
R810 10K
AFS
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RF AGC AMP
IF AMP
VIDEO
IC801 HA11215A
AGC
R807 6.8K
R805 5K-B
C815 0.033
R806 27K
R822 560
C804 2.2/50
R803 180 1/4
C802 0.0022
C803 2.2/50
C805 0.0022
CP852
60MHz
C801 10P
R853 10K
R852 4.3K
C852 4.7/25
L852 15μH
R802 15K
R851 5K-B
C851 0.0022
VIDEO LEVEL
R801 180
L801
L803
CP801 HW2011
SAW
L802
CP851
R882 68(1W)
C884 470/16
C883 270P
C882 0.01
R881 3.9K
C881 47/25
SIF
C886 33P
C885 8P
L882
FM DET
AUDIO AMP
SIF AMP
IC881 HA1124A
R866 1K
MF801 6.0MHz
C887 0.01
C891 33P
R884 1K
C842 100/16
R885 180
PG801
AUDIO
VIDEO
D871 1S2076
C825 18P
R827 1.2K
R825 10K
L807
R828 560
R878 220K(1/4W)
R877 3.3K
C826 10/25
R829 8.2K
Q806 2SC458C/D
Q805 2SA844D
R834 3.9K
R836 680
L812 15μH
C839 120P
R842 120 1/4
C828 47/16
R830 2.2K
R832 220
R833 4.7K
R835 680
R839 220
R837 680
R841 82 1/4
C840 47/16
C829 470/16
R843 47
Q807 2SC1213B/C


D742
D741
D740
D739
D738
D737
D736
D735
D734
D733
D732
D731
R721
S712
S711
S710
S709
S708
S707
S706
S705
S704
S703
S702
S701
PROGRAMME SELECTOR P.C.B
CN802
1 GND
2 12V
To TUNER PG802
CN702
1 L ch
2 K ch
3 J ch
4 I ch
5 H ch
6 G ch
7 F ch
8 E ch
9 D ch
10 C ch
11 B ch
12 A ch
PG701
1 VT
2 32V
TO TUNER CN701
PG 702
1 3 5 7 9 11 12
PG701
1 2
D782 D781 D780 D779 D778 D777
D776
D775 D774 D773 D772
D771
R782 R781 R780 R779 R778 R777 R776 R775 R774 R773 R772 R771
PROGRAMME PRESET P.C.B

Q805

B	6.8
C	3.3
E	7.5

Q 806

B	3.3
C	9.6
E	2.7

Q807

B	2.6
C	9.7
E	2.0

PG801

AUDIO	4
GND	3
VIDEO	2
GND	1

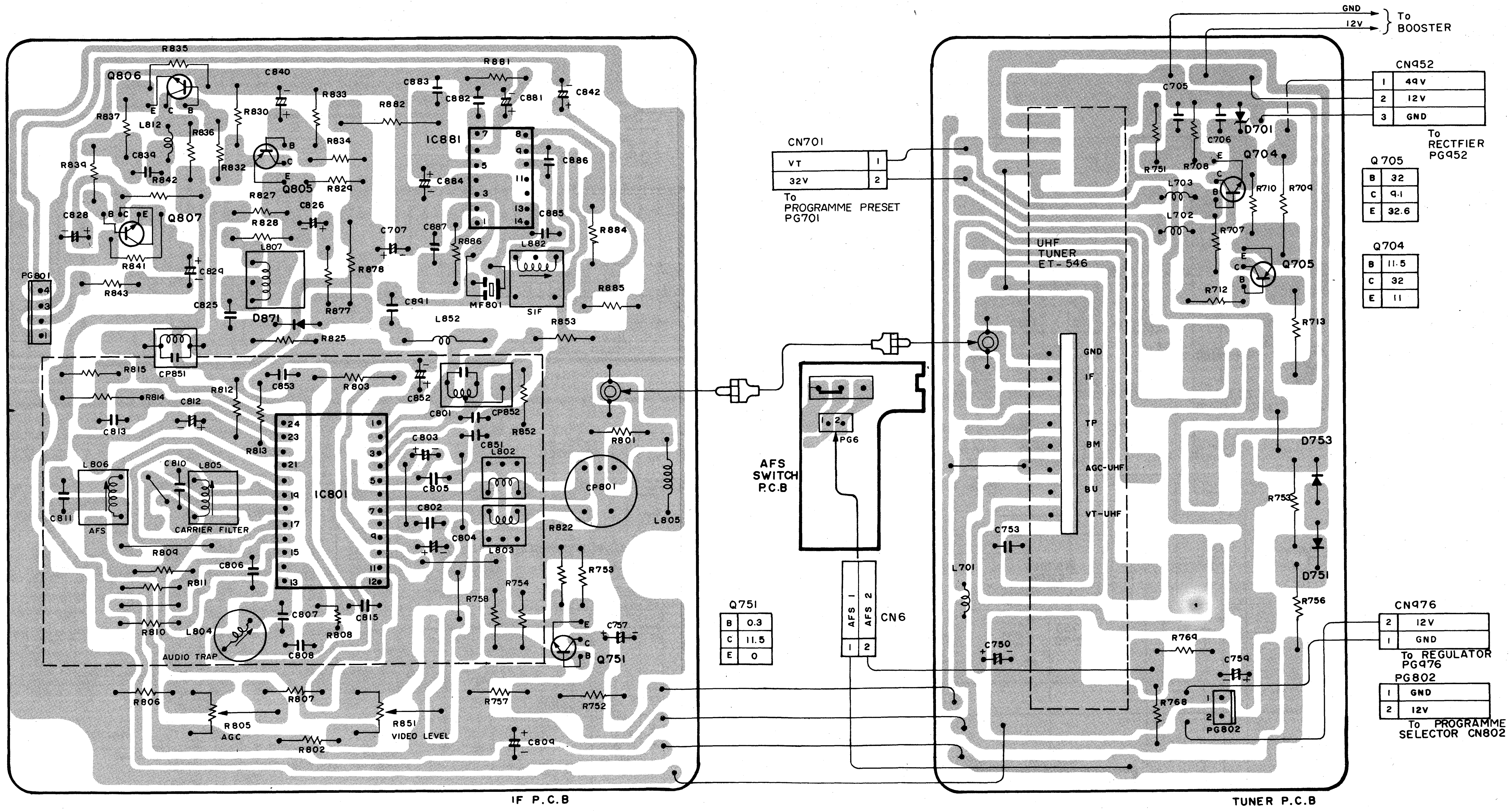
To 10P
CONNECTOR
CN801

IC881

7	5.7	8	4.5
6	2.3	9	3.8
5	11	10	3.8
4	0	11	0
3	0	12	0
2	2.0	13	0
1	2.0	14	0

IC801

24	8.6	1	5.2
23	12.5	2	4.9
22	3.2	3	4.9
21	12.5	4	0.8
20	4.0	5	4.9
19	6.9	6	3.7
18	6.9	7	3.7
17	4.0	8	4.9
16	7.2	9	6.6
15	2.1	10	0.9
14	5.0	11	0
13	5.0	12	8.9


IF P.C.B
TUNER P.C.B
GND
12V
To BOOSTER
UHF TUNER ET-546
GND
IF
TP
BM
AGC-UHF
BU
VT-UHF
AFS SWITCH P.C.B
PG6
CN6
AFS 1
AFS 2
To PROGRAMME PRESET PG701
To RECTFIER PG952
To REGULATOR PG976
To PROGRAMME SELECTOR CN802
IC801
IC881
Q806
Q805
Q807
Q751
Q704
Q705
D871
D701
D751
D753
MF801
SIF
CP801
CP851
CP852
PG801
PG802
AFS
CARRIER FILTER
AUDIO TRAP
AGC
VIDEO LEVEL
L804
L805
L806
L807
L802
L803
L812
L852
L882
L701
L702
L703
R805
R851
R801
R802
R803
R806
R807
R808
R809
R810
R811
R812
R813
R814
R815
R822
R825
R827
R828
R829
R830
R832
R833
R834
R835
R836
R837
R839
R841
R842
R843
R852
R853
R877
R878
R881
R882
R884
R885
R886
R707
R708
R709
R710
R712
R713
R751
R752
R753
R754
R756
R757
R758
R768
R769
C801
C802
C803
C804
C805
C806
C807
C808
C809
C810
C811
C812
C813
C815
C825
C826
C828
C829
C839
C840
C842
C851
C852
C853
C881
C882
C883
C884
C885
C886
C887
C891
C705
C706
C707
C750
C753
C757
C759

CN701

VT	1
32V	2

To
PROGRAMME PRESET
PG701

Q751

B	0.3
C	11.5
E	0

CN952

1	49V
2	12V
3	GND

To
RECTFIER
PG952

Q 705

B	32
C	9.1
E	32.6

Q704

B	11.5
C	32
E	11

CN976

2	12V
1	GND

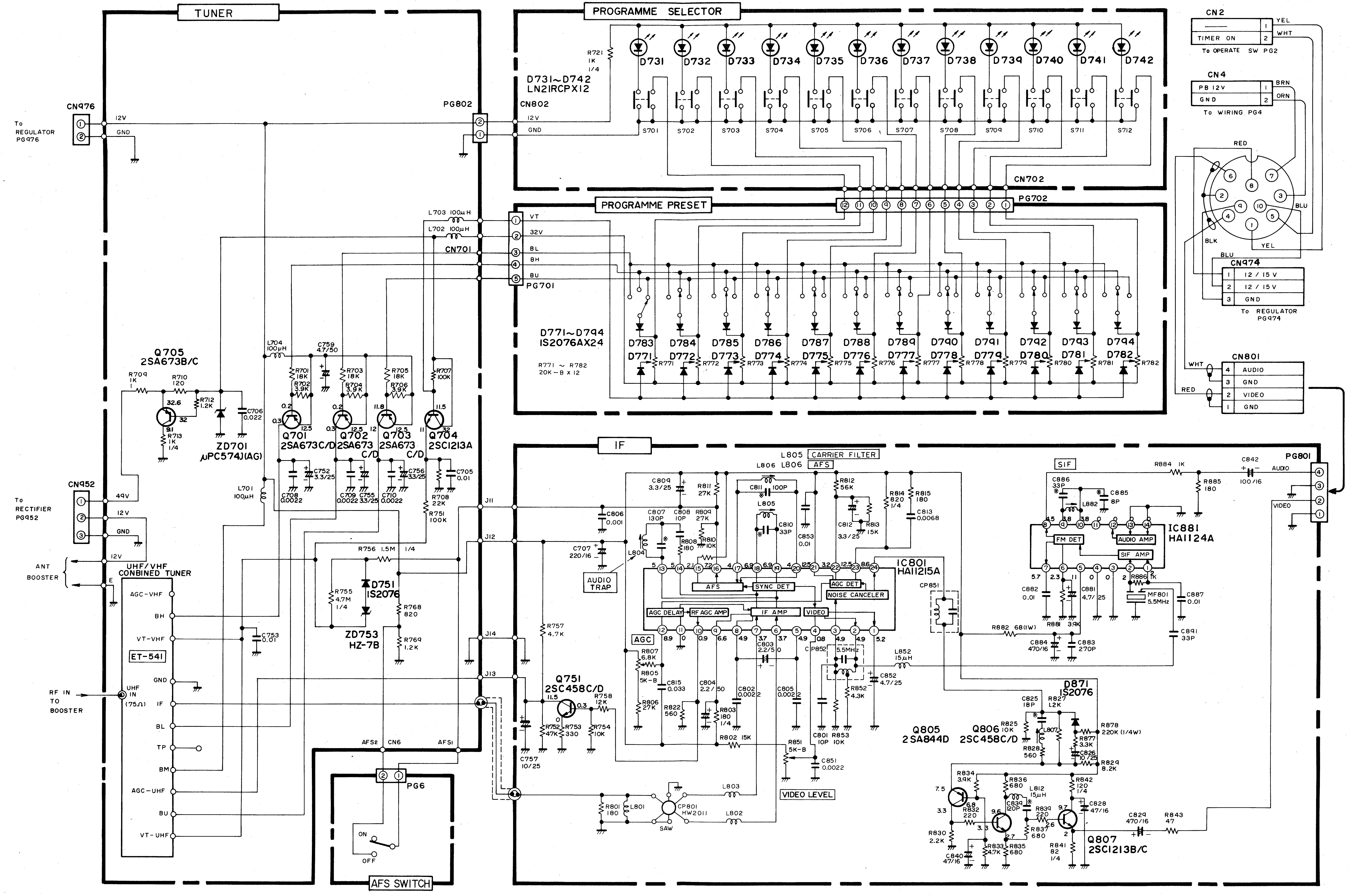
To REGULATOR
PG976

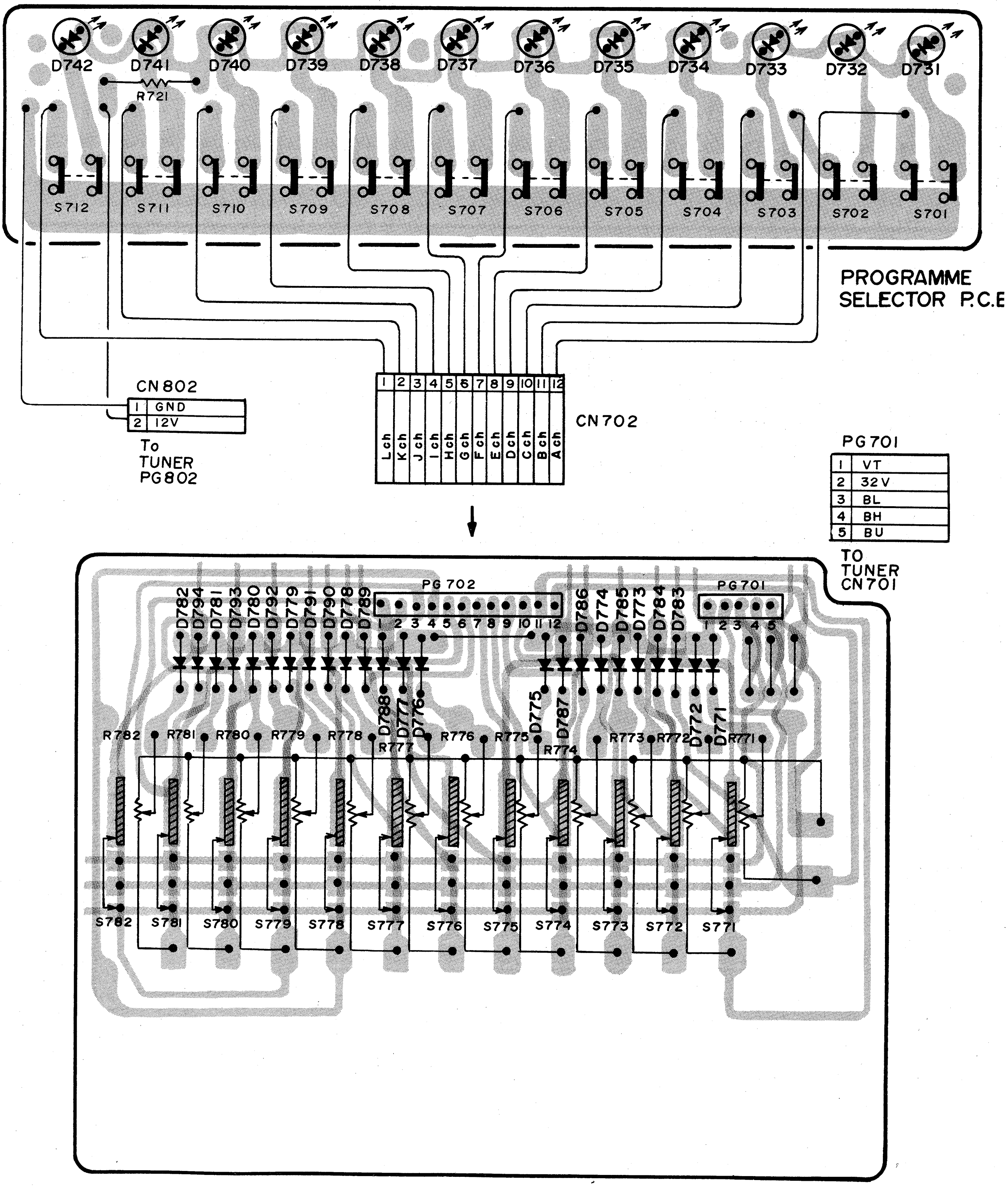
PG802

1	GND
2	12V

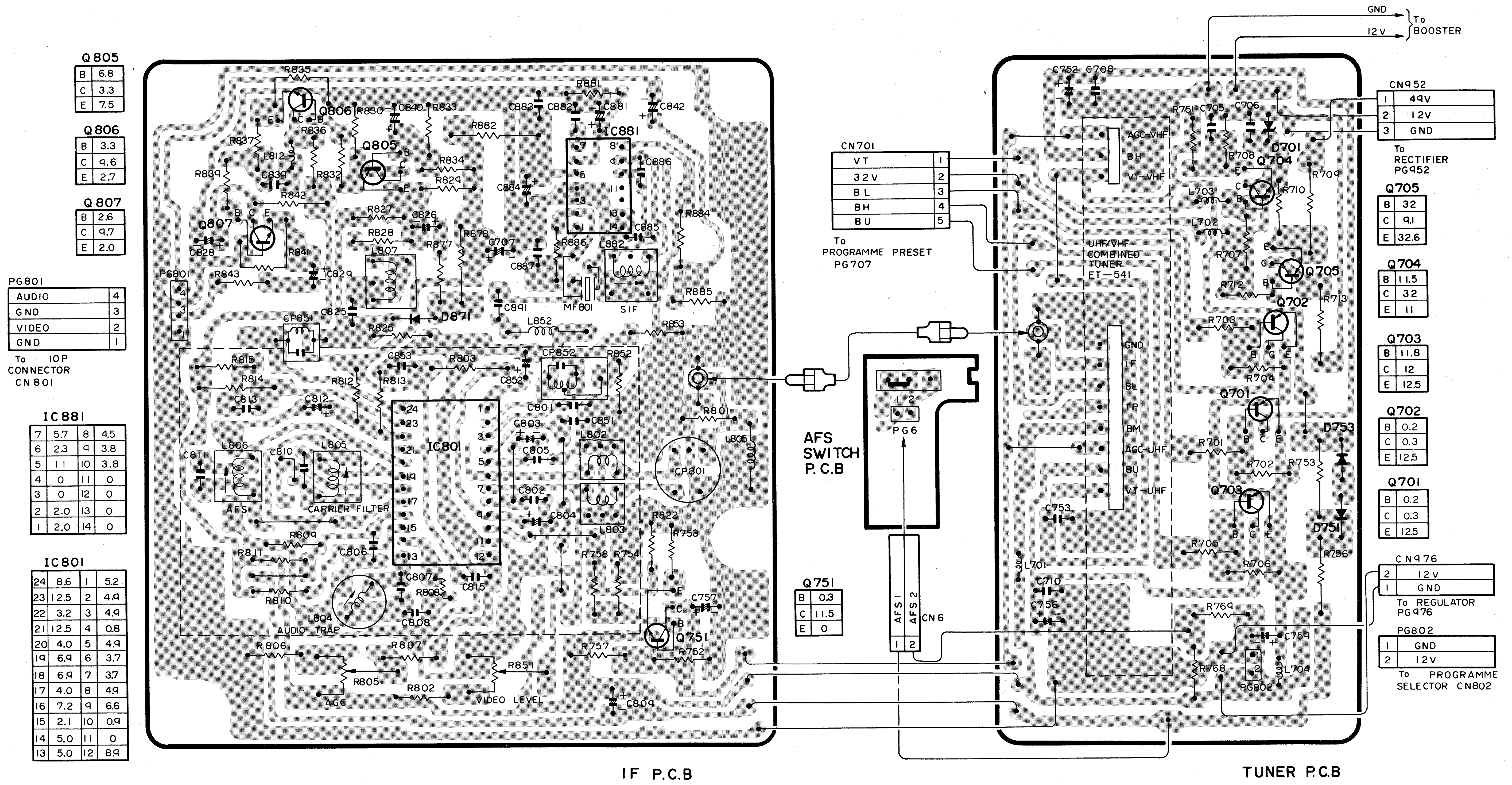
To PROGRAMME
SELECTOR CN802

TUNER/IF/PROGRAMME SELECTOR/PROGRAMME PRESET (For the UK model)


TUNER
PROGRAMME SELECTOR
PROGRAMME PRESET
IF
AFS SWITCH
CN976
To REGULATOR PG976
12V
GND
PG802
CN802
D731~D742 LN21RCPX12
R721 1K 1/4
D731
D732
D733
D734
D735
D736
D737
D738
D739
D740
D741
D742
S701
S702
S703
S704
S705
S706
S707
S708
S709
S710
S711
S712
CN702
PG702
CN2
TIMER ON
To OPERATE SW PG2
YEL
WHT
CN4
PB 12V
GND
To WIRING PG4
BRN
ORN
RED
BLU
BLK
YEL
CN974
12 / 15 V
12 / 15 V
GND
To REGULATOR PG974
L703 100μH
L702 100μH
CN701
PG701
VT
32V
BL
BH
BU
D771~D794 1S2076AX24
R771 ~ R782 20K-B x 12
D783
D784
D785
D786
D787
D788
D789
D790
D791
D792
D793
D794
D771
D772
D773
D774
D775
D776
D777
D778
D779
D780
D781
D782
CN801
AUDIO
GND
VIDEO
GND
Q705 2SA673B/C
R709 1K
R710 120
R712 1.2K
R713 1K 1/4
ZD701 μPC574J(AG)
C706 0.022
L704 100μH
C759 4.7/50
R701 18K
R702 3.9K
R703 18K
R704 3.9K
R705 18K
R706 3.9K
R707 100K
Q701 2SA673C/D
Q702 2SA673 C/D
Q703 2SA673 C/D
Q704 2SC1213A
C752 3.3/25
C756 33/25
C705 0.01
C708 0.0022
C709 0.0022
C755 33/25
C710 0.0022
R708 22K
R751 100K
L701 100μH
CN952
To RECTIFIER PG952
49V
12V
GND
ANT BOOSTER
UHF/VHF CONBINED TUNER
ET-541
AGC-VHF
BH
VT-VHF
GND
IF
BL
TP
BM
AGC-UHF
BU
VT-UHF
RF IN TO BOOSTER
UHF IN (75Ω)
R756 1.5M 1/4
R755 4.7M 1/4
D751 1S2076
ZD753 HZ-7B
R768 820
R769 1.2K
C753 0.01
J11
J12
J14
J13
AFS2
CN6
AFS1
PG6
ON
OFF
R757 4.7K
Q751 2SC458C/D
R758 12K
R752 47K
R753 330
R754 10K
C757 10/25
AUDIO TRAP
L804
C806 0.001
C707 220/16
L805 CARRIER FILTER
L806 AFS
C809 3.3/25
R811 27K
C811 100P
R812 56K
R814 820 1/4
R815 180
C813 0.0068
C807 130P
C808 10P
R804 27K
C810 33P
C853 0.01
C812 3.3/25
R813 15K
R808 180
R810 10K
IC801 HA11215A
AFS
SYNC DET
AGC DET
NOISE CANCELER
AGC DELAY
RF AGC AMP
IF AMP
VIDEO
AGC
R807 6.8K
R805 5K-B
R806 27K
C815 0.033
R822 560
C804 2.2/50
C802 0.002
C803 2.2/50
R803 180 1/4
C805 0.002
CP852 5.5MHz
R852 4.3K
C852 4.7/25
L852 15μH
R802 15K
R851 5K-B
C801 10P
R853 10K
C851 0.0022
VIDEO LEVEL
R801 180
L801
CP801 HW2011
SAW
L803
L802
CP851
SIF
R884 1K
C842 100/16
AUDIO
PG801
VIDEO
R885 180
C886 33P
C885 8P
L882
IC881 HA1124A
FM DET
AUDIO AMP
SIF AMP
R886 1K
C882 0.01
C881 4.7/25
R881 3.9K
MF801 5.5MHz
C887 0.01
R882 68(1W)
C884 470/16
C883 270P
C891 33P
D871 1S2076
C825 18P
R827 1.2K
L807
R878 220K (1/4W)
R877 3.3K
C826 10/25
R829 8.2K
R825 10K
R828 560
Q805 2SA844D
Q806 2SC458C/D
R834 3.9K
R836 680
L812 15μH
C834 120P
R842 120 1/4
C828 47/16
R832 220
R839 220
R837 680
R830 2.2K
C840 47/16
R833 4.7K
R835 680
R841 82 1/4
Q807 2SC1213B/C
C829 470/16
R843 47


D742
D741
D740
D739
D738
D737
D736
D735
D734
D733
D732
D731
R721
S712
S711
S710
S709
S708
S707
S706
S705
S704
S703
S702
S701
PROGRAMME SELECTOR P.C.B
CN802
1 GND
2 12V
To TUNER PG802
CN702
1 Lch
2 Kch
3 Jch
4 Ich
5 Hch
6 Gch
7 Fch
8 Ech
9 Dch
10 Cch
11 Bch
12 Ach
PG701
1 VT
2 32V
3 BL
4 BH
5 BU
TO TUNER CN701
PG702
1 2 3 4 5 6 7 8 9 10 11 12
PG701
1 2 3 4 5
D782
D794
D781
D793
D780
D792
D779
D791
D790
D778
D789
D788
D777
D776
D775
D787
D786
D774
D785
D773
D784
D783
D772
D771
R782
R781
R780
R779
R778
R777
R776
R775
R774
R773
R772
R771
S782
S781
S780
S779
S778
S777
S776
S775
S774
S773
S772
S771

PROGRAMME PRESET P. C. B


IF P.C.B
TUNER P.C.B
AFS SWITCH P.C.B
PG6
CN6
AFS 1
AFS 2
IC801
IC881
Q805
Q806
Q807
Q751
Q701
Q702
Q703
Q704
Q705
D701
D751
D753
D871
CP801
CP851
CP852
MF801
SIF
L802
L803
L804
L805
L806
L807
L812
L852
L882
L701
L702
L703
L704
AFS
CARRIER FILTER
AUDIO TRAP
AGC
VIDEO LEVEL
R805
R851
UHF/VHF COMBINED TUNER ET-541
AGC-VHF
BH
VT-VHF
GND
IF
BL
TP
BM
AGC-UHF
BU
VT-UHF
PG801
PG802
GND
12V
To BOOSTER

Q805	
B	6.8
C	3.3
E	7.5

Q806	
B	3.3
C	9.6
E	2.7

Q807	
B	2.6
C	9.7
E	2.0

PG801

AUDIO	4
GND	3
VIDEO	2
GND	1

To 10P CONNECTOR CN801

IC881			
7	5.7	8	4.5
6	2.3	9	3.8
5	11	10	3.8
4	0	11	0
3	0	12	0
2	2.0	13	0
1	2.0	14	0

IC801			
24	8.6	1	5.2
23	12.5	2	4.9
22	3.2	3	4.9
21	12.5	4	0.8
20	4.0	5	4.9
19	6.9	6	3.7
18	6.9	7	3.7
17	4.0	8	4.9
16	7.2	9	6.6
15	2.1	10	0.9
14	5.0	11	0
13	5.0	12	8.9

CN701

VT	1
32V	2
BL	3
BH	4
BU	5

To PROGRAMME PRESET PG707

Q751	
B	0.3
C	11.5
E	0

CN952

1	49V
2	12V
3	GND

To RECTIFIER PG952

Q705	
B	32
C	9.1
E	32.6

Q704	
B	11.5
C	32
E	11

Q703	
B	11.8
C	12
E	12.5

Q702	
B	0.2
C	0.3
E	12.5

Q701	
B	0.2
C	0.3
E	12.5

CN976

2	12V
1	GND

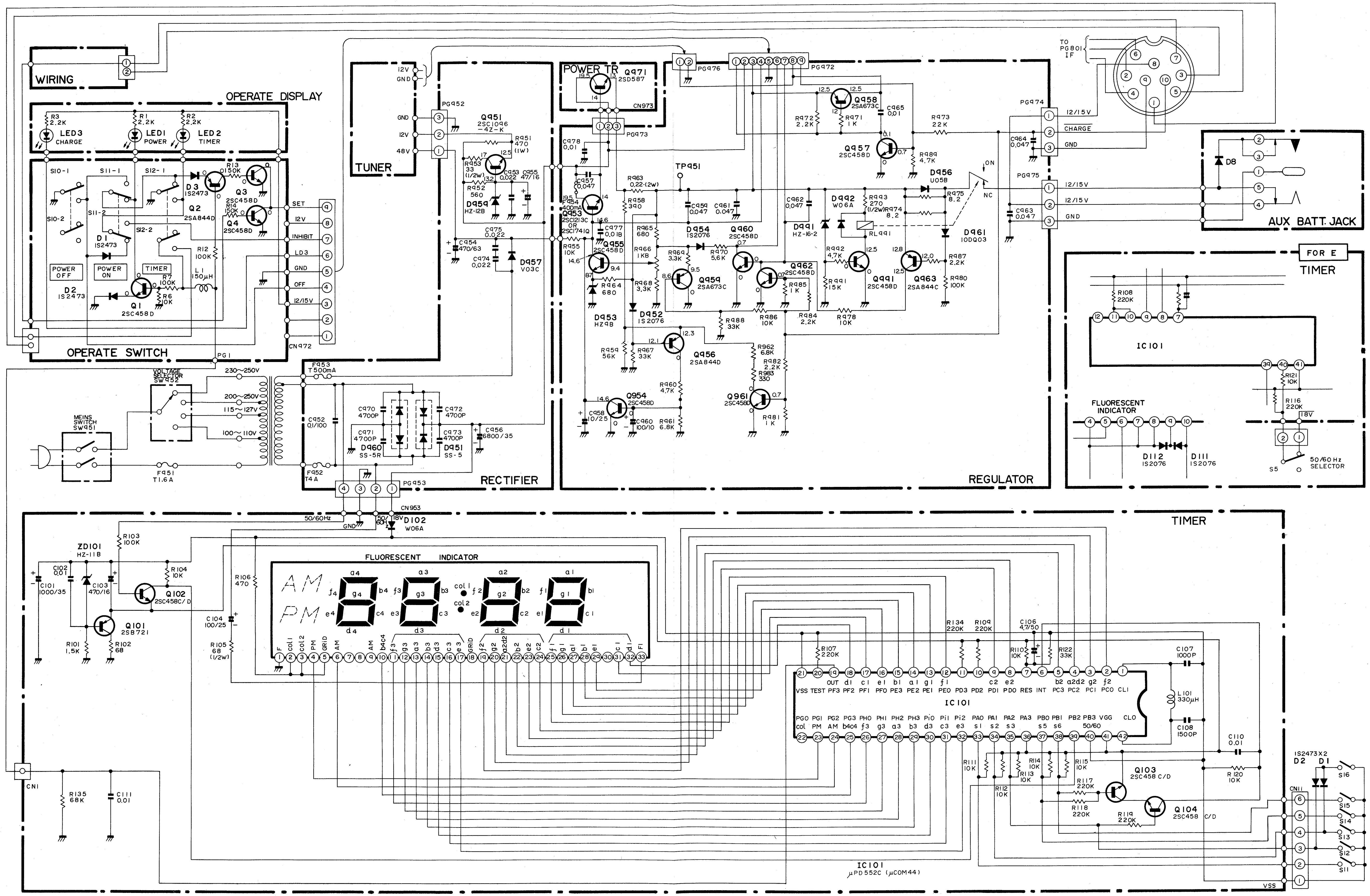
To REGULATOR PG976

PG802

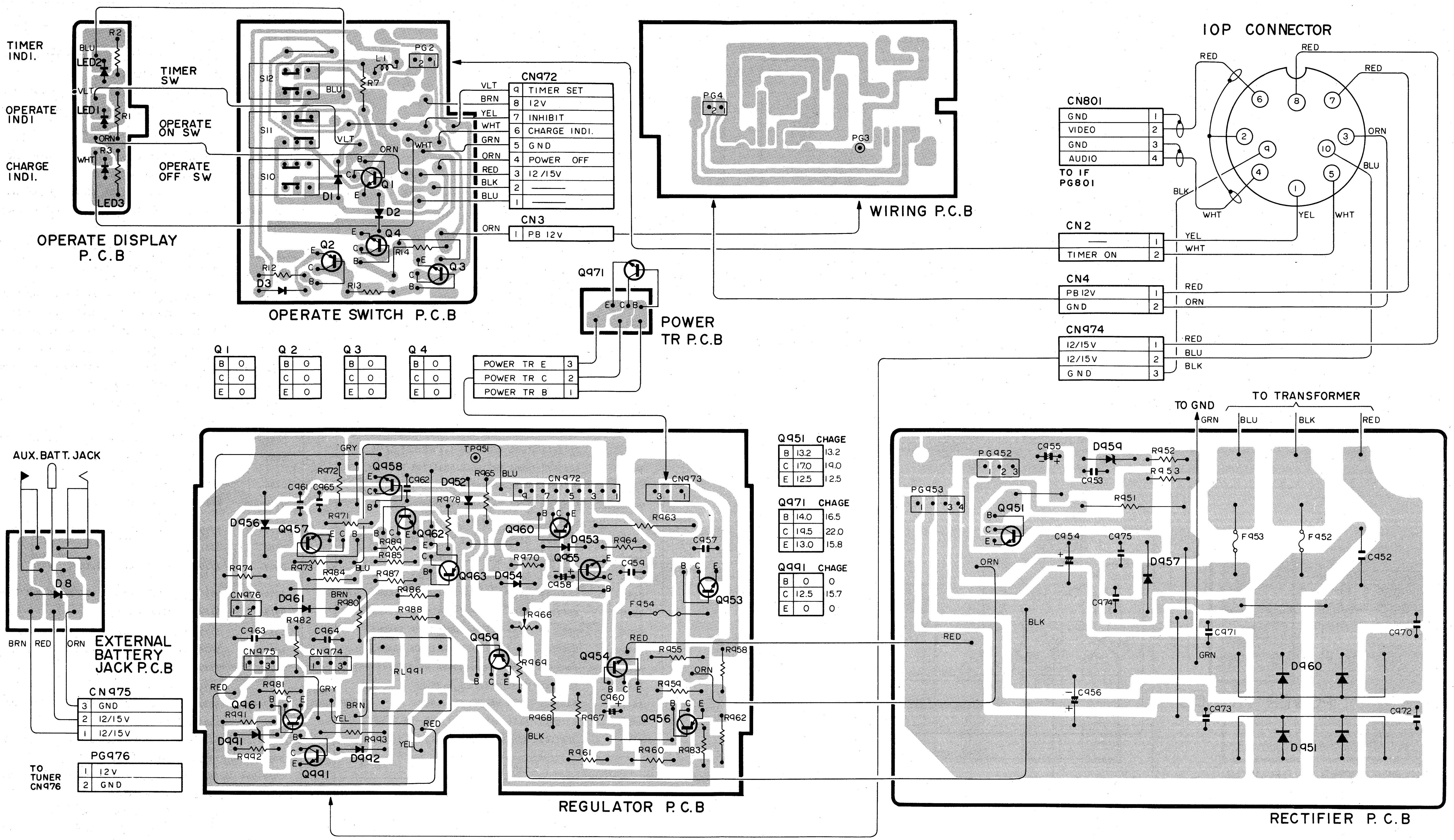
1	GND
2	12V

To PROGRAMME SELECTOR CN802

TIMER/RECTIFIER/REGULATOR



WIRING
OPERATE DISPLAY
OPERATE SWITCH
LED3 CHARGE
LED1 POWER
LED2 TIMER
R3 2.2K
R1 2.2K
R2 2.2K
S10-1
S11-1
S12-1
S10-2
S11-2
S12-2
D3 1S2473
D1 1S2473
D2 1S2473
Q1 2SC458D
Q2 2SA844D
Q3 2SC458D
Q4 2SC458D
R13 150K
R14 150K
R12 100K
R7 100K
R6 10K
L1 150μH
POWER OFF
POWER ON
TIMER
SET
12V
INHIBIT
LD3
GND
OFF
12/15V
CN972
PG1
TUNER
12V
GND
48V
PG952
Q951 2SC1096 -4Z-K
R951 470 (1W)
R953 33 (1/2W)
R952 560
D959 HZ-12B
C953 0.022
C955 47/16
C954 470/63
C975 0.022
C974 0.022
D957 V03C
POWER TR
Q971 2SD587
CN973
PG973
PG976
PG972
VOLTAGE SELECTOR SW952
230~250V
200~250V
115~127V
100~110V
MEINS SWITCH SW951
F951 T1.6A
F953 T500mA
F952 T4A
C952 0.1/100
C970 4700P
C971 4700P
C972 4700P
C973 4700P
D960 SS-5R
D951 SS-5
C956 6800/35
PG953
CN953
RECTIFIER
C978 0.01
C957 0.047
F954 400mA
Q953 2SC1213C OR 2SC1741Q
R963 0.22 (2W)
R958 390
TP951
C959 0.047
C961 0.047
C977 0.018
Q955 2SC458D
R955 10K
R964 680
D953 HZ9B
R965 680
R966 1KB
R968 3.3K
D952 1S2076
R969 3.3K
D954 1S2076
R970 5.6K
Q960 2SC458D
Q959 2SA673C
Q962 2SC458D
R985 1K
R986 10K
R988 33K
R984 2.2K
R978 10K
R959 56K
R967 33K
Q956 2SA844D
R962 6.8K
R982 2.2K
R983 330
R960 4.7K
Q961 2SC458D
R981 1K
Q954 2SC458D
C958 10/25
C960 100/10
R961 6.8K
Q958 2SA673C
C965 0.01
R972 2.2K
R971 1K
Q957 2SC458D
R973 22K
R989 4.7K
D956 U05B
C962 0.047
D992 W06A
R993 270 (1/2W)
R974 8.2
R975 8.2
D991 HZ-16-2
RL991
D961 10DQ03
R992 4.7K
Q991 2SC458D
Q963 2SA844C
R987 2.2K
R980 100K
R991 15K
ON
NC
REGULATOR
PG974
PG975
C964 0.047
C963 0.047
12/15V
CHARGE
GND
TO PG801 IF
D8
AUX BATT. JACK
FOR E
TIMER
R108 220K
IC101
R121 10K
R116 220K
18V
FLUORESCENT INDICATOR
D112 1S2076
D111 1S2076
S5
50/60 Hz SELECTOR
TIMER
50/60Hz
GND
D102 W06A
ZD101 HZ-11B
R103 100K
C102 0.01
C101 1000/35
C103 470/16
R104 10K
Q102 2SC458C/D
Q101 2SB721
R101 1.5K
R102 68
R106 470
C104 100/25
R105 68 (1/2W)
FLUORESCENT INDICATOR
AM
PM
col 1
col 2
R134 220K
R109 220K
C106 4.7/50
R107 220K
R110 10K
R122 33K
C107 1000P
L101 330μH
C108 1500P
C110 0.01
R111 10K
R112 10K
R113 10K
R114 10K
R115 10K
R117 220K
R118 220K
R119 220K
R120 10K
Q103 2SC458 C/D
Q104 2SC458 C/D
1S2473×2
D2
D1
S16
S15
S14
S13
S12
S11
CN11
VSS
CN1
R135 68K
C111 0.01
IC101 μPD552C (μCOM44)


TIMER INDI.
OPERATE INDI
CHARGE INDI.
TIMER SW
OPERATE ON SW
OPERATE OFF SW
OPERATE DISPLAY P.C.B
OPERATE SWITCH P.C.B
WIRING P.C.B
IOP CONNECTOR
POWER TR P.C.B
AUX. BATT. JACK
EXTERNAL BATTERY JACK P.C.B
REGULATOR P.C.B
RECTIFIER P.C.B
TO GND
TO TRANSFORMER
CN972: 9 TIMER SET; 8 12V; 7 INHIBIT; 6 CHARGE INDI.; 5 GND; 4 POWER OFF; 3 12/15V; 2 ——; 1 ——
CN3: 1 PB 12V
CN801: GND 1; VIDEO 2; GND 3; AUDIO 4
TO IF PG801
CN2: —— 1; TIMER ON 2
CN4: PB 12V 1; GND 2
CN974: 12/15V 1; 12/15V 2; GND 3
POWER TR E 3; POWER TR C 2; POWER TR B 1
CN975: 3 GND; 2 12/15V; 1 12/15V
PG976: 1 12V; 2 GND
TO TUNER CN976
VLT BRN YEL WHT GRN ORN RED BLK BLU
Q1 Q2 Q3 Q4 D1 D2 D3 R2 R3 R1 R7 R12 R13 R14 L1 PG2 PG3 PG4 S10 S11 S12 LED1 LED2 LED3 D8 Q971
Q951 Q953 Q954 Q955 Q956 Q957 Q958 Q959 Q960 Q961 Q962 Q963 Q991 D951 D952 D954 D956 D957 D959 D960 D961 D991 D992 F452 F453 F454 RL991 TP951 PG952 PG953 CN973 CN975 CN976

Q1	
B	0
C	0
E	0

Q2	
B	0
C	0
E	0

Q3	
B	0
C	0
E	0

Q4	
B	0
C	0
E	0

Q951		CHAGE
B	13.2	13.2
C	17.0	19.0
E	12.5	12.5

Q971		CHAGE
B	14.0	16.5
C	19.5	22.0
E	13.0	15.8

Q991		CHAGE
B	0	0
C	12.5	15.7
E	0	0

Q953		CHAGE	Q954		CHAGE	Q955		CHAGE	Q956		CHAGE
B	14.6	17.0	B	0	0.1	B	9.4	9.4	B	12.1	15.1
C	19.5	21.5	C	14.6	17.0	C	14.5	17.0	C	0	0.2
E	14.0	16.4	E	0	0	E	8.7	8.7	E	12.3	15.6

Q957		CHAGE	Q958		CHAGE	Q959		CHAGE	Q960		CHAGE
B	0.7	0	B	12.0	15.7	B	8.6	0.2	B	0	0.7
C	0.1	15.7	C	12.5	0	C	0	0	C	11.0	0
E	0	0	E	12.6	15.7	E	9.5	0.8	E	0	0

Q961		CHAGE	Q962		CHAGE	Q963		CHAGE
B	0.7	0	B	0.7	0	B	12.0	15.0
C	0	15.7	C	0	0.7	C	12.5	15.5
E	0	0	E	0	0	E	12.8	15.7

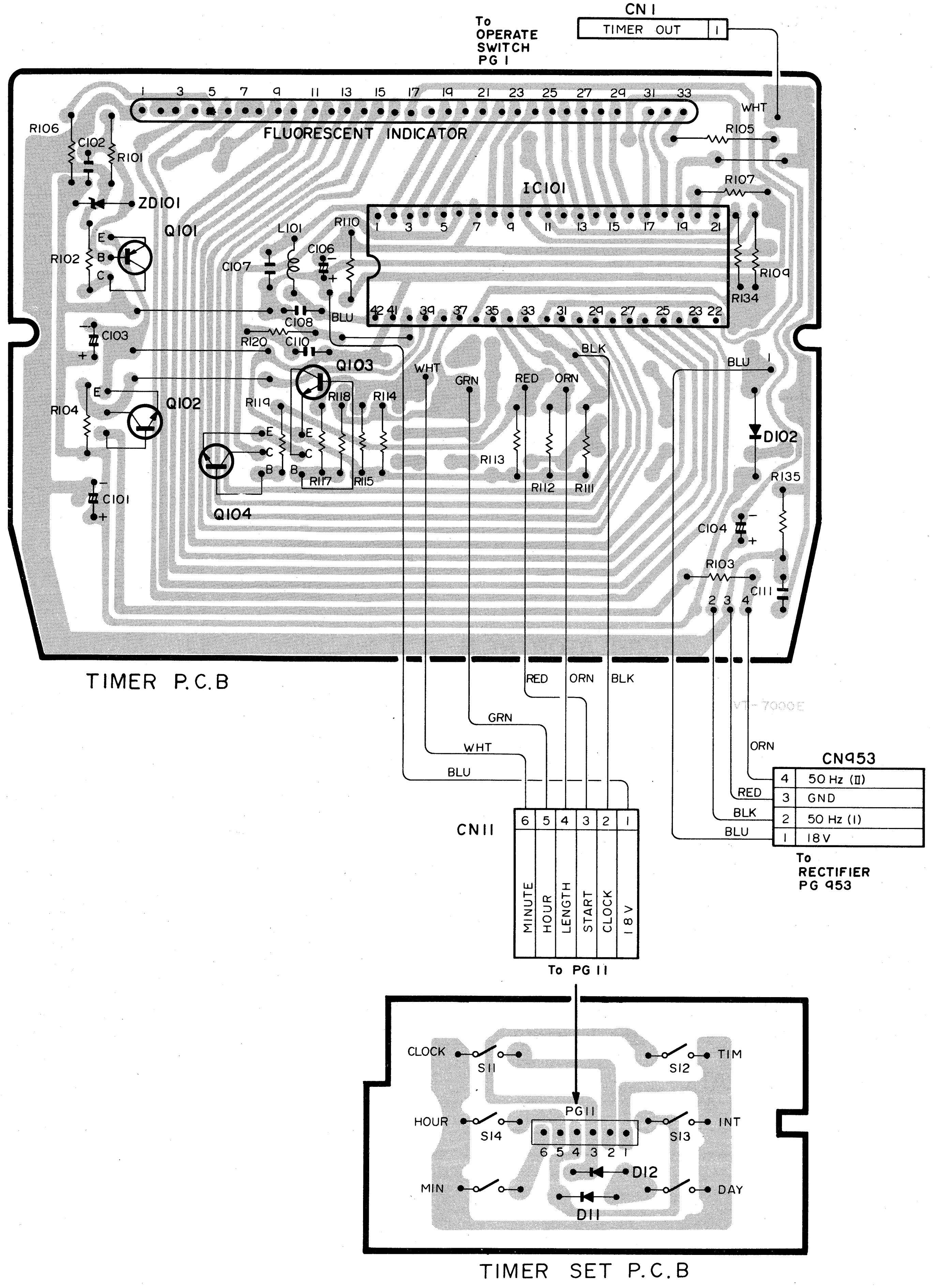
PG953	
1	18V
2	50/60Hz
3	GND
4	50/60Hz

To TIMER CN953

PG952	
1	49V
2	12V
3	GND

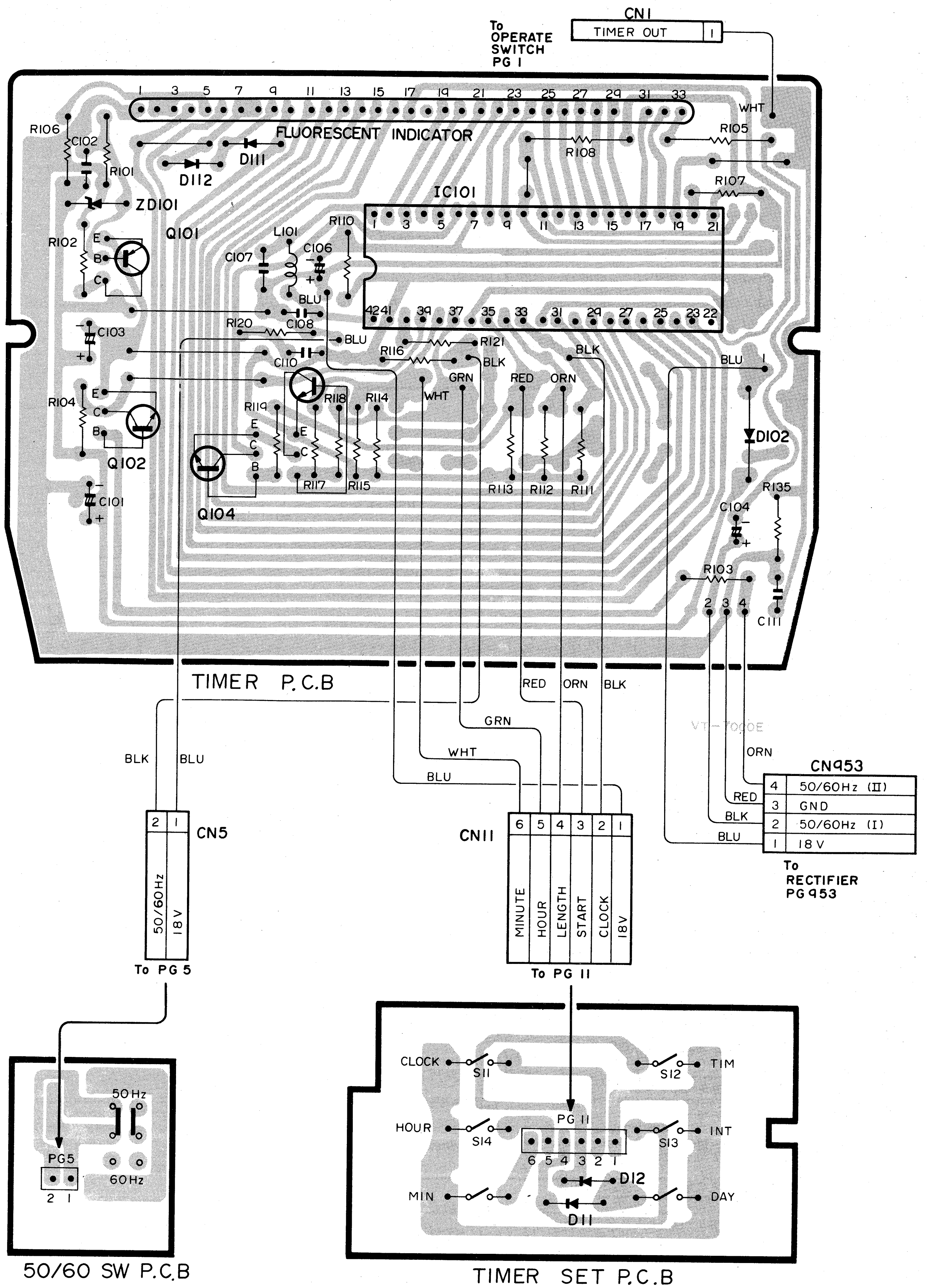
To TUNER CN952

[For the UK model]



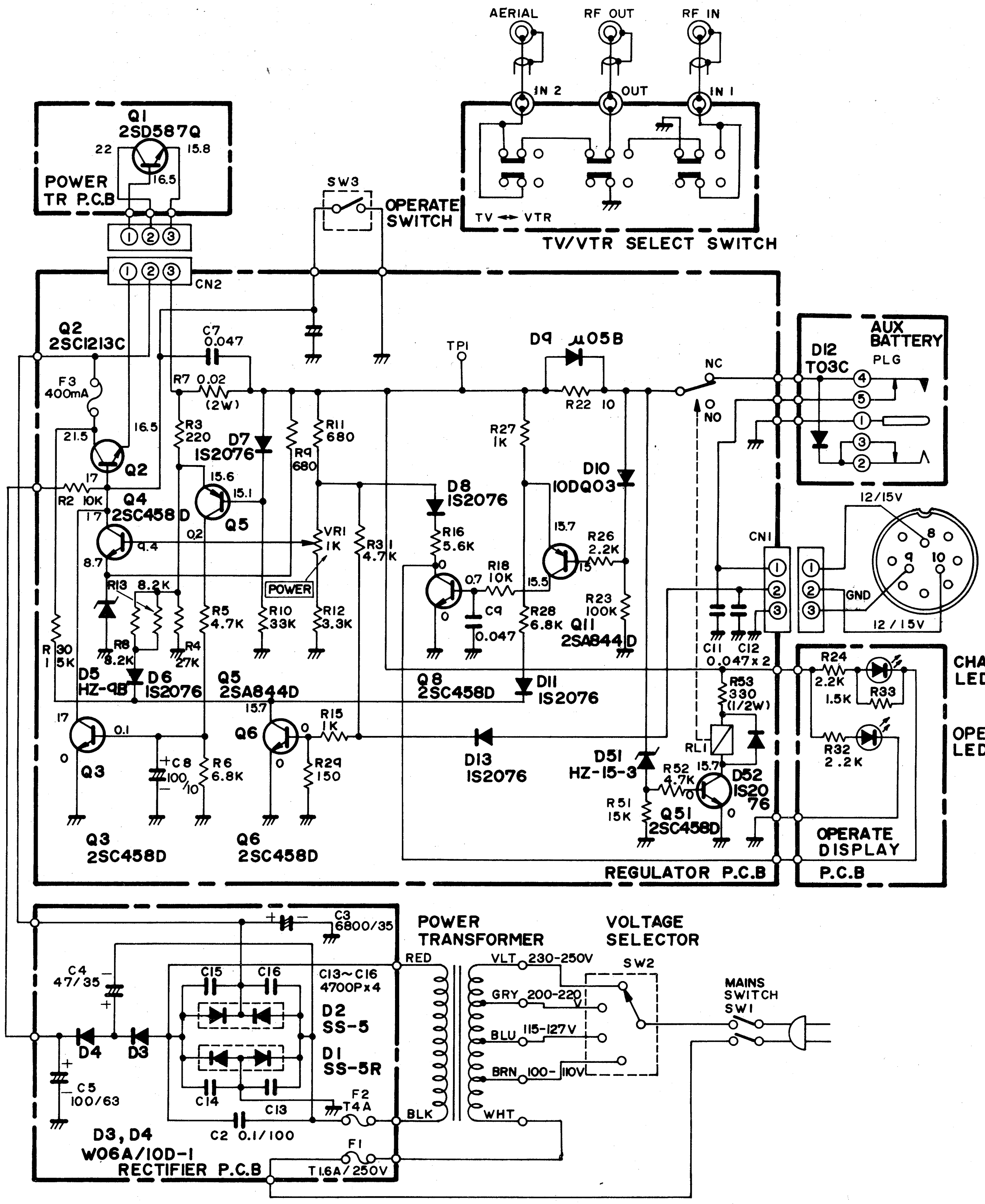
CN1
TIMER OUT
1
To OPERATE SWITCH PG 1
WHT
FLUORESCENT INDICATOR
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
R106
C102
R101
R105
R107
ZD101
IC101
Q101
L101
R110
C106
C107
R102
E
B
C
R109
R134
C108
BLU
C103
R120
C110
BLK
Q103
WHT
GRN
RED
ORN
BLU
R104
Q102
R119
R118
R114
D102
Q104
R117
R115
R113
R112
R111
C101
R135
C104
R103
C111
2 3 4
TIMER P.C.B
RED
ORN
BLK
GRN
WHT
BLU
ORN
RED
BLK
BLU
CN953
4 50 Hz (II)
3 GND
2 50 Hz (I)
1 18V
To RECTIFIER PG 953
CN11
6 5 4 3 2 1
MINUTE
HOUR
LENGTH
START
CLOCK
18V
To PG 11
CLOCK
S11
S12
TIM
HOUR
S14
PG11
S13
INT
6 5 4 3 2 1
D12
MIN
DAY
D11
TIMER SET P.C.B

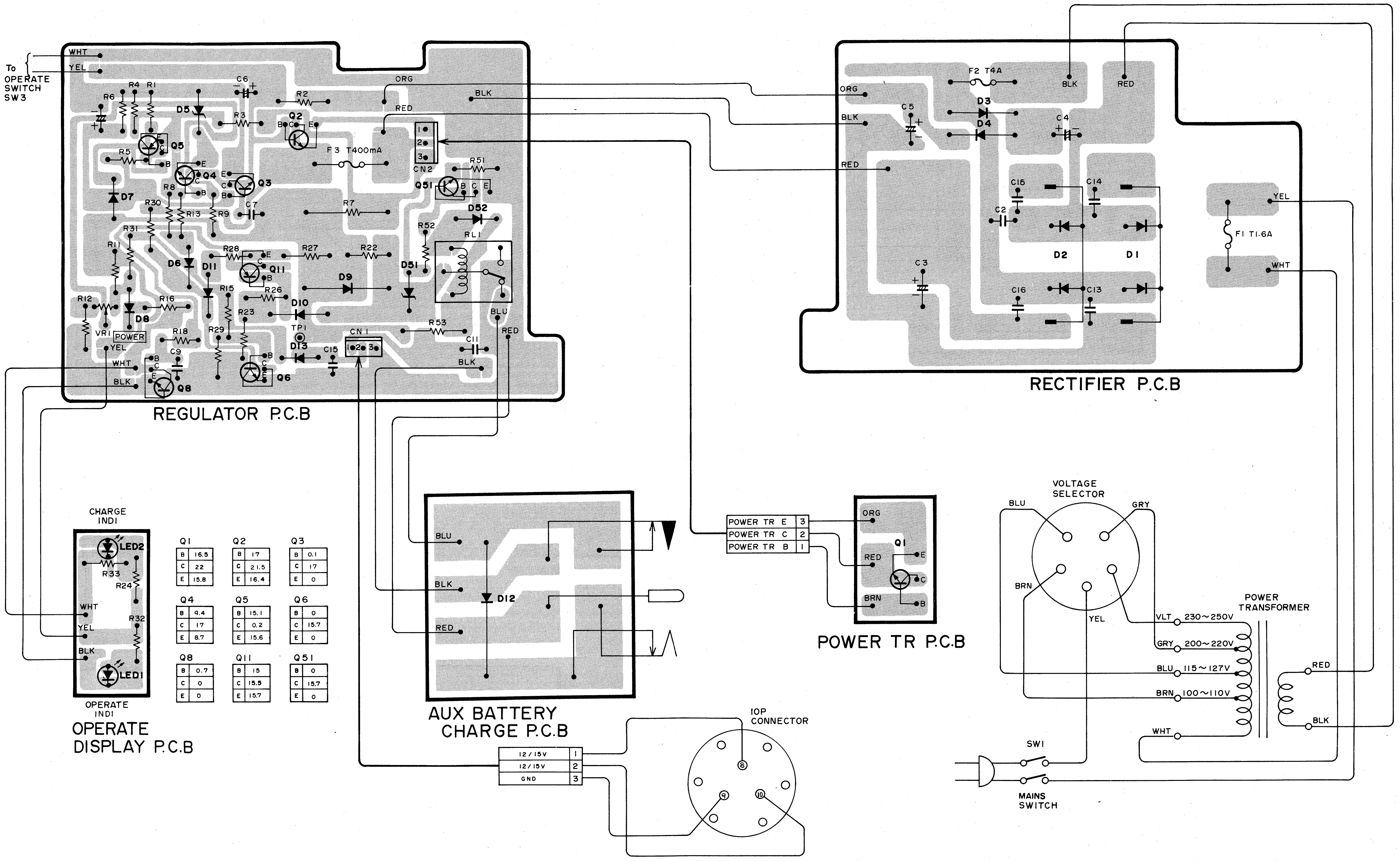
[For the E model]



CN1
TIMER OUT
1
To OPERATE SWITCH PG 1
WHT
FLUORESCENT INDICATOR
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
R106
C102
R101
D111
D112
R105
R108
R107
ZD101
IC101
Q101
L101
R110
C106
C107
R102
BLU
R120
C108
C103
BLU
R116
R121
C110
BLK
BLK
GRN
RED
ORN
WHT
BLU
R104
Q102
R119
R118
R114
D102
Q104
R117
R115
R113
R112
R111
R135
C101
C104
R103
2 3 4
C111
TIMER P.C.B
RED
ORN
BLK
GRN
WHT
BLU
BLK
BLU
CN5
2 1
50/60Hz
18V
To PG 5
ORN
RED
BLK
BLU
CN953
4 50/60Hz (II)
3 GND
2 50/60Hz (I)
1 18V
To RECTIFIER PG 953
CN11
6 5 4 3 2 1
MINUTE
HOUR
LENGTH
START
CLOCK
18V
To PG 11
50Hz
PG5
60Hz
2 1
50/60 SW P.C.B
CLOCK
S11
S12
TIM
HOUR
S14
PG 11
S13
INT
6 5 4 3 2 1
D12
MIN
DAY
D11
TIMER SET P.C.B

ADAPTOR


AERIAL
RF OUT
RF IN
IN 2
OUT
IN 1
TV ◄► VTR
TV/VTR SELECT SWITCH
SW3
OPERATE SWITCH
Q1
2SD587Q
22
15.8
16.5
POWER TR P.C.B
① ② ③
CN2
Q2
2SC1213C
C7 0.047
F3 400mA
R7 0.02 (2W)
TP1
D9 μ05B
R22 10
NC
NO
21.5
16.5
17
Q2
R2 10K
R3 220
D7 1S2076
R9 680
R11 680
R27 1K
D10 10DQ03
15.6
15.1
Q5
Q4 2SC458D
0.2
9.4
8.7
VR1 1K
POWER
R31 4.7K
D8 1S2076
R16 5.6K
R18 10K
0.7
15.5
15.7
R26 2.2K
15
C9 0.047
R28 6.8K
R23 100K
Q11 2SA844D
R13 8.2K
R8 8.2K
R4 27K
R5 4.7K
R10 33K
R12 3.3K
R 30 1.5K
D5 HZ-9B
D6 1S2076
Q5 2SA844D
15.7
Q8 2SC458D
D11 1S2076
17
0.1
Q3
C8 100/10
R6 6.8K
Q6
R15 1K
R29 150
D13 1S2076
D51 HZ-15-3
R52 4.7K
R51 15K
Q51 2SC458D
15.7
D52 1S2076
RL1
R53 330 (1/2W)
C11 C12 0.047×2
Q3 2SC458D
Q6 2SC458D
REGULATOR P.C.B
AUX BATTERY
D12 T03C
PLG
④ ⑤ ① ③ ②
CN1
① ② ③
GND
12/15V
12 / 15V
8 9 10
R24 2.2K
R33 1.5K
CHARGE LED2
R32 2.2K
OPERATE LED1
OPERATE DISPLAY P.C.B
C3 6800/35
POWER TRANSFORMER
VOLTAGE SELECTOR
SW2
C4 47/35
C15
C16
C13~C16 4700P×4
D2 SS-5
D1 SS-5R
D4
D3
C5 100/63
C14
C13
F2 T4A
C2 0.1/100
D3, D4 W06A/10D-1
RECTIFIER P.C.B
F1 T1.6A/250V
RED
VLT 230-250V
GRY 200-220V
BLU 115-127V
BRN 100-110V
BLK
WHT
MAINS SWITCH SW1


To OPERATE SWITCH SW3
WHT
YEL
REGULATOR P.C.B
R1
R2
R3
R4
R5
R6
R7
R8
R9
R11
R12
R13
R15
R16
R18
R22
R23
R26
R27
R28
R29
R30
R31
R51
R52
R53
C6
C7
C9
C11
C15
D5
D6
D7
D8
D9
D10
D11
D13
D51
D52
Q2
Q3
Q4
Q5
Q6
Q8
Q11
Q51
F3 T400mA
CN1
CN2
RL1
VR1
POWER
TP1
ORG
RED
BLK
BLU
RECTIFIER P.C.B
F2 T4A
F1 T1.6A
D1
D2
D3
D4
C2
C3
C4
C5
C13
C14
C15
C16
CHARGE INDI
LED2
LED1
R24
R32
R33
OPERATE INDI
OPERATE DISPLAY P.C.B
D12
AUX BATTERY CHARGE P.C.B
POWER TR E 3
POWER TR C 2
POWER TR B 1
Q1
E
C
B
BRN
POWER TR P.C.B
VOLTAGE SELECTOR
GRY
POWER TRANSFORMER
VLT
230~250V
200~220V
115~127V
100~110V
SW1
MAINS SWITCH
IOP CONNECTOR
12/15V 1
12/15V 2
GND 3
8
9
10

Q1

B	16.5
C	22
E	15.8

Q2

B	17
C	21.5
E	16.4

Q3

B	0.1
C	17
E	0

Q4

B	9.4
C	17
E	8.7

Q5

B	15.1
C	0.2
E	15.6

Q6

B	0
C	15.7
E	0

Q8

B	0.7
C	0
E	0

Q11

B	15
C	15.5
E	15.7

Q51

B	0
C	15.7
E	0

REPLACEMENT PARTS LIST

[DECK]

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
C203	5058351	TRIMMER 90PF
C206	5058351	TRIMMER 90PF
C350	5058083	TRIMMER 30PF
C515	0256357	ELECTROLYTIC 4.7MF 16V
C538	0256357	ELECTROLYTIC 4.7MF 16V
		RESISTORS
R204	5007195	SEMI VARIABLE 100OHM
R210	5007195	SEMI VARIABLE 100OHM
R212	5007195	SEMI VARIABLE 100OHM
R226-227	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R231-232	5007162	SEMI VARIABLE 1 KOHM
R233	5007161	SEMI VARIABLE 470OHM
R236	5007162	SEMI VARIABLE 1 KOHM
R253	5007186	SEMI VARIABLE RESISTOR 10KOHM
R255	5007187	SEMI VARIABLE RESISTOR 22KOHM
R256	5007186	SEMI VARIABLE RESISTOR 10KOHM
R282	5007186	SEMI VARIABLE RESISTOR 10KOHM
R319	5007186	SEMI VARIABLE RESISTOR 10KOHM
R362	5007186	SEMI VARIABLE RESISTOR 10KOHM
R431	5007191	SEMI VARIABLE RESISTOR 220KOHM
R433	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R437	5007189	SEMI VARIABLE RESISTOR 100KOHM
R441	0170476	FUSE RESISTOR 47OHM+-5% 1/4W
R488	5007164	SEMI VARIABLE 4.7KOHM
R489	5007166	SEMI VARIABLE 22 KOHM
R585-586	5007188	SEMI VARIABLE RESISTOR 47KOHM
R587	5007226	SEMI VARIABLE 47KOHM
R588	5007182	SEMI VARIABLE RESISTOR 470OHM
R592	5007187	SEMI VARIABLE RESISTOR 22KOHM
R593	5007191	SEMI VARIABLE RESISTOR 220KOHM
R596	5007187	SEMI VARIABLE RESISTOR 22KOHM
R599	5007186	SEMI VARIABLE RESISTOR 10KOHM
R620	5005021	VARIABLE RESISTOR 200KOHM
R622	5007164	SEMI VARIABLE 4.7KOHM
R679	5007225	SEMI VARIABLE 22KOHM
R956	0170476	FUSE RESISTOR 47OHM+-5% 1/4W
R990	5007185	SEMI VARIABLE RESISTOR 4.7KOHM
		CAPACITORS
D201-202	5330731	DIODE GERMANIUM IN60 80MHZ 50MW
D251	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D253	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D254-255	0575005	DIODE GERMANIUM 1N60 80M
D256	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D300-304	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D401	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D402	5331511	DIODE DAN201
D403	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D404	5331511	DIODE DAN201
D405-407	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D501-505	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D506	5330104	RECTIFIER SILICON V06A 15K
D507-510	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D511(522)	5331511	DIODE DAN201
D512-514	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D517-518	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D519(520)	5331511	DIODE DAN201
D521	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D523	5330104	RECTIFIER SILICON V06A 15K
D524-527	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D531-534	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D551	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D583	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D601-603	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D604	5330394	DIODE HZ6A2
D605-606	5380481	LED SLR-53GC1
D607	5380491	LED LN81CPHL
D608	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D903	5330104	RECTIFIER SILICON V06A 15K
D904	5331431	DIODE ERB81
D905-906	5330104	RECTIFIER SILICON V06A 15K
D907	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D908	5331511	DIODE DAN201
D909	5330104	RECTIFIER SILICON V06A 15K
D910-911	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D912	5330542	DIODE HZ15-3
D913	5331511	DIODE DAN201
D915	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D916	5330316	DIODE HZ7C1
D917	5331511	DIODE DAN201
D919-920	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D932	5331511	DIODE DAN201
D934-935	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D936	5331511	DIODE DAN201
D938-939	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D940	5331511	DIODE DAN201
D942	5330321	ZENER DIODE HZ-9A
D943	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D944	5330316	DIODE HZ7C1
D945	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D946	5331511	DIODE DAN201
D947-948	5330133	DIODE SILICON 1S2076 100MHZ 250MW

SYMBOL-NO	P-NO	DESCRIPTION
D949	5330104	RECTIFIER SILICON V06A 15K
D950-952	5330104	RECTIFIER SILICON V06A 15K
D953	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D954-955	5380441	LED LN55
D956	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D957	5331511	DIODE DAN201
D959-960	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D961	5331511	DIODE DAN201
D962-968	5330133	DIODE SILICON 1S2076 100MHZ 250MW
D985	5331511	DIODE DAN201
IC202	5351521	IC HA11703
IC203	5351621	IC HA11716
IC204	5358421	IC TA4195
IC205	5358501	IC TA4190
IC206	5358431	IC TA4196
IC207	5358441	IC TA4197
IC208	5358461	IC TA4199
IC209	5068171	CR PACK RC003
IC251	5351501	IC HA11701
IC252	5358451	IC TA4198
IC300	5351601	IC HA11710
IC301	5351551	IC HA11706
IC302	5358371	IC TA4191
IC303	5358381	IC TA4192
IC304	5351551	IC HA11706
IC305	5351671	IC HA11717
IC401	5350712	IC BA329
IC402	5352431	IC BA546
IC403	5359901	IC UPD4066C
IC451	5358541	IC TA4180
IC481	5352111	IC HA11714
IC482	5352121	IC HA11715
IC501	5359842	IC HA11711
IC502-503	5352101	IC HA11713
IC504	5357361	IC TA4145
IC506	5350251	IC HA1406
IC509-511	5359501	IC MPD4011C
IC512	5357331	IC TA4139
IC515	5357221	IC TA4127
IC516	5357201	IC TA4125
IC521-525	5359501	IC MPD4011C
IC526	5359611	IC MPD4001C
IC601	5350271	IC BA301B
IC602	5357322	IC TA4138A
IC603	5359901	IC UPD4066C
IC604	5357371	IC TA4146
IC901	5359777	IC HD38842A23
IC902	5359501	IC MPD4011C
IC903	5359611	IC MPD4001C
IC904	5391031	HALL ELEMENT DN6838

SYMBOL-NO	P-NO	DESCRIPTION
(IC904)	6755481	IC HOLDER
IC907	5358311	IC TA4184
IC908	5358251	IC TA4177
IC909	5358241	IC TA4176
IC910	5358302	IC TA4183A
IC911	5358221	IC TA4174
IC912	5358231	IC TA4175
IC913	5358151	IC TA4167
IC985	5357981	IC TA4158
Q201-205	5322462	TRANSISTOR 2SD636R
Q251	5321252	2SA844D
Q252	5320069	TRANSISTOR 2SC458CD
Q255-256	5320069	TRANSISTOR 2SC458CD
Q300-301	5320069	TRANSISTOR 2SC458CD
Q302	5321941	TRANSISTOR 2SK104H
Q303-305	5320069	TRANSISTOR 2SC458CD
Q401-406	5320069	TRANSISTOR 2SC458CD
Q407	5320613	TRANSISTOR 2SC1213C
Q408	5322721	TRANSISTOR 2SC2001
Q409-410	5320069	TRANSISTOR 2SC458CD
Q411	5320613	TRANSISTOR 2SC1213C
Q412	5320069	TRANSISTOR 2SC458CD
Q501	5321661	TRANSISTOR 2SC2021R
Q502	5320593	TRANSISTOR SILICON 2SA673C 80M
Q503	5320643	TRANSISTOR SILICON 2SC1162 150M
Q504-505	5321661	TRANSISTOR 2SC2021R
Q506	5320614	TRANSISTOR 2SC1213D
Q509	5321661	TRANSISTOR 2SC2021R
Q511	5321672	TRANSISTOR 2SA786R
Q512	5321661	TRANSISTOR 2SC2021R
Q513-514	5321672	TRANSISTOR 2SA786R
Q515-518	5321661	TRANSISTOR 2SC2021R
Q521	5321672	TRANSISTOR 2SA786R
Q522	5321661	TRANSISTOR 2SC2021R
Q550	5321661	TRANSISTOR 2SC2021R
Q601-603	5320069	TRANSISTOR 2SC458CD
Q901-903	5321661	TRANSISTOR 2SC2021R
Q907	5320723	TRANSISTOR 2SA715WT-C
Q908-909	5320643	TRANSISTOR SILICON 2SC1162 150M
Q910-911	5321661	TRANSISTOR 2SC2021R
Q912	5320723	TRANSISTOR 2SA715WT-C
Q913	5320643	TRANSISTOR SILICON 2SC1162 150M
Q914	5320723	TRANSISTOR 2SA715WT-C
Q915	5380471	PHOTO TRANSISTOR PN150TV
Q916	5380471	PHOTO TRANSISTOR PN150TV
Q920	5321252	2SA844D
Q921-924	5321661	TRANSISTOR 2SC2021R
Q985	5320613	TRANSISTOR 2SC1213C
Q986-987	5321292	TRANSISTOR 2SC1740S

SYMBOL-NO	P-NO	DESCRIPTION
		TRANSFORMERS
T401	5260366	BIAS COIL
		COILS
L201	5150365	CHOKE COIL 3.9 MH
L202	5152075	CHOKE COIL 12MH
L203-204	5152073	CHOKE COIL 8.2MICROH
L205	5152087	PEAKING COIL 100MICROH
L206	5152089	PEAKING COIL 150MICROH
L207	5152087	PEAKING COIL 100MICROH
L209	5152079	CHOKE COIL 22UH+-10%
L210	5152083	CHOKE COIL
L211	5152092	PEAKING COIL 220MICROH
L212	5152087	PEAKING COIL 100MICROH
L214	5152079	CHOKE COIL 22UH+-10%
L215	5152087	PEAKING COIL 100MICROH
L216	5152092	PEAKING COIL 220MICROH
L217	5152076	CHOKE COIL 15MICROH
L251	5152095	CHOKE COIL 390MICROH
L252	5152087	PEAKING COIL 100MICROH
L253-254	5152075	CHOKE COIL 12MH
L255	5152087	PEAKING COIL 100MICROH
L300	5152087	PEAKING COIL 100MICROH
L301	5152099	CHOKE COIL 820UH+-10%
L302-304	5152087	PEAKING COIL 100MICROH
L305	5150366	CHOKE COIL 15 MH
L306	5152087	PEAKING COIL 100MICROH
L401	5150361	CHOKE COIL
L402	5152099	CHOKE COIL 820UH+-10%
L403	5150573	CHOKE COIL
L404	5152099	CHOKE COIL 820UH+-10%
L451	5152087	PEAKING COIL 100MICROH
L901	5641171	RELAY
		CRYSTALS
X300	5780534	CRYSTAL 4.435572MHZ
X301	5780533	CRYSTAL 4.433619MHZ
X501	5780492	CRYSTAL

SYMBOL-NO	P-NO	DESCRIPTION
		MISCELLANEOUS
CP201	5161985	LOW PASS FILTER
CP202	5161981	DELAY LINE
CP203	5161954	HIGH PASS FILTER
CP251	5161985	LOW PASS FILTER
CP252	5161981	DELAY LINE
CP253	5161931	DELAY LINE
CP300	5161971	LOW PASS FILTER
CP301	5161972	BAND PASS FILTER
CP302	5161952	LOW PASS FILTER
CP303	5161973	BAND PASS FILTER
CP304	5161974	BAND PASS FILTER
DL201	5785111	1H DELAY LINE
DL300	5785121	2H DELAY LINE
F901-902	5721062	FUSE 4A 250V
J601	5670462	MOULD JACK - 3.5MMD SLIDE SYNC
J602	5671712	JACK WITH SWITCH
J603	5659391	10P SOCKET
J604	5677131	8P DIN SOCKET
J605	5678091	DC JACK
J902	5678081	DC JACK
J903	5672021	JACK-2.5MMD
PG406	5677351	10P DIN SOCKET
PG410	5679671	JACK PLATE
RL401	5641362	RELAY
RL402	5641371	RELAY
SW251	5624241	SLIDE SWITCH
SW401	5623551	SLIDE SWITCH
S901	5634329	PUSH SWITCH
S914	5633362	PUSH SWITCH
S915	5601166	PUSH SWITCH
S916-917	5601165	SWITCH
S918	5601165	SWITCH
S919	5633311	PUSH SWITCH

[TUNER]

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C107	0249731	CERAMIC, DISC CAPACITOR 0.001 MICRO F PLU
C108	0249732	CERAMIC, DISC CAPACITOR 1500PF +_ 10%
C956	0256128	ELECTROLYTIC 6800UF 35V
		RESISTORS
R805	0151187	VARIABLE 5KOHM
R851	0151187	VARIABLE 5KOHM
R966	5007162	SEMI VARIABLE 1 KOHM
		SEMI-CONDUCTORS
D 1-3	5330573	DIODE SILICON 1S2473 300MHZ 300MW
D 8	5330001	RECTIFIER SILICON V03C 60H
D 11-12	5330131	DIODE 1S2076
D111-112	5330131	DIODE 1S2076 (E)
D701	5350611	IC UPC574J
D731-742	5380541	LED LN21RCP
D751	5330131	DIODE 1S2076
D753	5330312	DIODE-ZENER SILICON
D871	5330131	DIODE 1S2076
D951	5331401	DIODE SS-5
D952	5330131	DIODE 1S2076
D953	5330322	DIODE-ZENER SILICON TR-9S 10K
D954	5330131	DIODE 1S2076
D956	5330501	DIODE SILICON UO-5B 60HZ 3MW
D957	5330001	RECTIFIER SILICON V03C 60H
D959	5330532	DIODE SILICON HZ-12B 1.0M
D960	5331402	DIODE SS-5R
D961	5331441	DIODE 10DQ03
D991	5330562	DIODE HZ16-2
D992	5330341	RECTIFIER SILICON W0-6A 60H
IC101	5359861	IC MPD552C-023
IC801	5351662	IC HA11215A
IC881	5351352	IC HA1124A
LD 1-3	5380301	LED GL4PR2
Q 1	5320064	TRANSISTOR 2SC458D
Q 2	5321252	2SA844D
Q 3-4	5320064	TRANSISTOR 2SC458D
Q101	5322361	TRANSISTOR 2SB721
Q102-104	5320064	TRANSISTOR 2SC458D
Q701-703	5320593	TRANSISTOR 2SA673C (E)
Q704	5320623	TRANSISTOR SILICON 2SC1213A-C 80MHZ 400M
Q705	5320593	TRANSISTOR 2SA673C
Q751	5320069	TRANSISTOR 2SC458CD
Q805	5321252	2SA844D
Q806	5320069	TRANSISTOR 2SC458CD
Q807	5320613	TRANSISTOR 2SC1213C
Q951	5321231	TRANSISTOR SILICON 2SC1096 60MHZ 2W
Q953	5320613	TRANSISTOR 2SC1213C
Q954-955	5320064	TRANSISTOR 2SC458D
Q956	5321252	2SA844D
Q957	5320064	TRANSISTOR 2SC458D
Q958-959	5320593	TRANSISTOR SILICON 2SA673C 80M
Q960-962	5320064	TRANSISTOR 2SC458D
Q963	5321251	TRANSISTOR SILICON 2SA844C 200MHZ 200MW
Q971	5322391	TRANSISTOR 2SD587Q
Q991	5320064	TRANSISTOR 2SC458D
ZD101	5330552	ZENNER DIODE HZ11B
		COILS
CP851-852	2161502	TRAP COIL (E)
CP851-852	2161503	TRAP COIL (BS)
L101	5152094	CHOKE COIL 330MICRO H
L701-703	2120482	FILTER COIL
L704	2120482	FILTER COIL (E)
L801	2122161	FILTER COIL
L802-803	2161844	COIL
L804	2142024	MOLD IFT
L805	2141359	CARRIER FILTER COIL (BS)
L805	2142065	CARRIER FILTER COIL (E)
L806	2142019	AFC COIL
L807	5123821	COIL
L852	2121225	PEAKING COIL
L882	2142051	COIL
MF801	2140911	CERAMIC FILTER (E)
MF801	2140921	CERAMIC FILTER (BS)

[ADAPTOR]

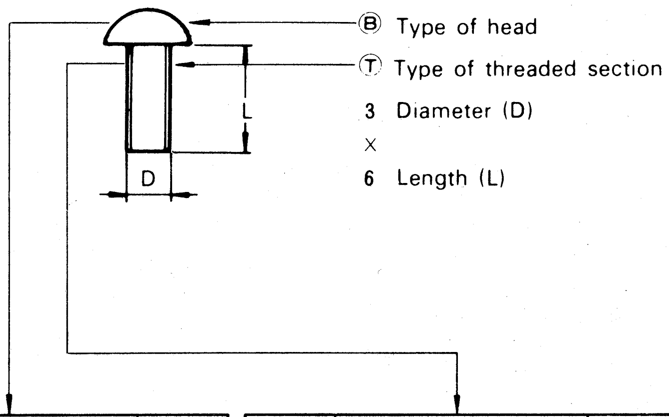
SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C 3	0256128	ELECTROLYTIC 6800UF 35V
		RESISTORS
VR 1	5007162	SEMI VARIABLE 1 KOHM
		SEMI-CONDUCTORS
D 1	5331402	DIODE SS-5R
D 2	5331401	DIODE SS-5
D 3-4	5330341	RECTIFIER SILICON W0-6A 60H
D 5	5330322	DIODE-ZENER SILICON TR-9S 10K
D 6-8	5330131	DIODE 1S2076
D 9	5330501	DIODE SILICON UO-58 60HZ 3MW
D 10	5331441	DIODE 10DQ03
D 11	5330131	DIODE 1S2076
D 12	5330001	RECTIFIER SILICON V03C 60H
D 13	5330131	DIODE 1S2076
D 51	5330542	DIODE HZ15-3
D 52	5330131	DIODE 1S2076
LED 1-2	5380301	LED GL4PR2
		SEMI-CONDUCTORS
Q 1	5322391	TRANSISTOR 2SD587Q
Q 2	5320613	TRANSISTOR 2SC1213C
Q 3-4	5320064	TRANSISTOR 2SC458D
Q 5	5321252	2SA844D
Q 6	5320064	TRANSISTOR 2SC458D
Q 8	5320064	TRANSISTOR 2SC458D
Q 11	5321252	2SA844D
Q 51	5320064	TRANSISTOR 2SC458D
		MISCELLANEOUS
623	5678101	DC JACK
F 1	5720179	FUSE 1A
F 2	5721062	FUSE 4A 250V
F 3	5720172	FUSE 250V 0.4A
RL 1	5641171	RELAY
SW 1	5602021	SEESAW SWITCH
SW 2	5605051	ROTARY SWITCH
SW 3	5634158	PUSH SWITCH
		FOR FINAL ASSEMBLY
0001	6033854	TOP CASE
0002	6223464	FRONT PANEL ASSEMBLY (BS)
0002	6223465	FRONT PANEL ASSEMBLY (E)
0003	6034173	BOTTOM CASE ASSEMBLY (BS)
0003	6034174	BOTTOM CASE ASSEMBLY (E)
0005	6052701	BUTTON-SELECT

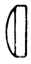
SYMBOL-NO	P-NO	DESCRIPTION
0006	5746094	POWER CORD (BS)
0006	5746157	POWER CORD (E)
0007	5897663	10P DIN CORD
0009	6573421	RUBBER LEG
0012	6224011	REAR PANEL ASSEMBLY (BS)
0012	6224012	REAR PANEL ASSEMBLY (E)
		FOR PACKING MATERIAL
	7861301	CUSHION (1B)
	7861311	CUSHION (2F)
	7930475	CARTON BOX (BS)
	7930476	CARTON BOX (E)
		MISCELLANEOUS
611	2423461	TUNER ET-541 (E)
612	2423501	TUNER ET-546 (BS)
613	5310191	CLOCK DISPLAY (E)
614	5310201	FLOVORSCENT INDICATOR (BS)
615	5585571	BOOSTER (E)
616	5585575	BOOSTER (BS)
617	5605051	ROTARY SWITCH
618	5634381	PUSH SWITCH
619	5678101	DC JACK
620	5721061	FUSE 1.6A
CP801	2300031	COMPOUND COMPONENT SAW FILTER (BS)
CP801	2300041	COMPOUND COMPONENT SAW FILTER (E)
F952	5721062	FUSE 4A 250V
F953	5720172	FUSE 250V 0.4A
F953	5720173	FUSE 500MA
RL991	5641171	RELAY
S 5	5623571	SWITCH (E)
S 6	5633572	PUSH SWITCH
S 10-12	5634291	PUSH SWITCH
S 11-16	5633561	SWITCH

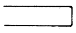
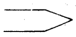
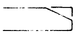
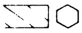
EXPLODED VIEWS

SCREW CLASSIFICATION

Example: BT3 × 6



Abbre-viation	Name	Shape
No symbol	Brazier head	
P	Pan head	
B	Binding head	
O	Oval countersunk head	
F	Flat countersunk head	

Abbre-viation	Name	Shape
No symbol	Machine (clamps without tapping)	
t	Tapping (clamps with tapping) Type 1	
T	Tapping (clamps with tapping) Type 2	
f	Forming tight (for metal)	
Note	Since the forming tight screw tightens while self-tapping, machine screws can be replaced by tapping screws	

Washers and Nuts

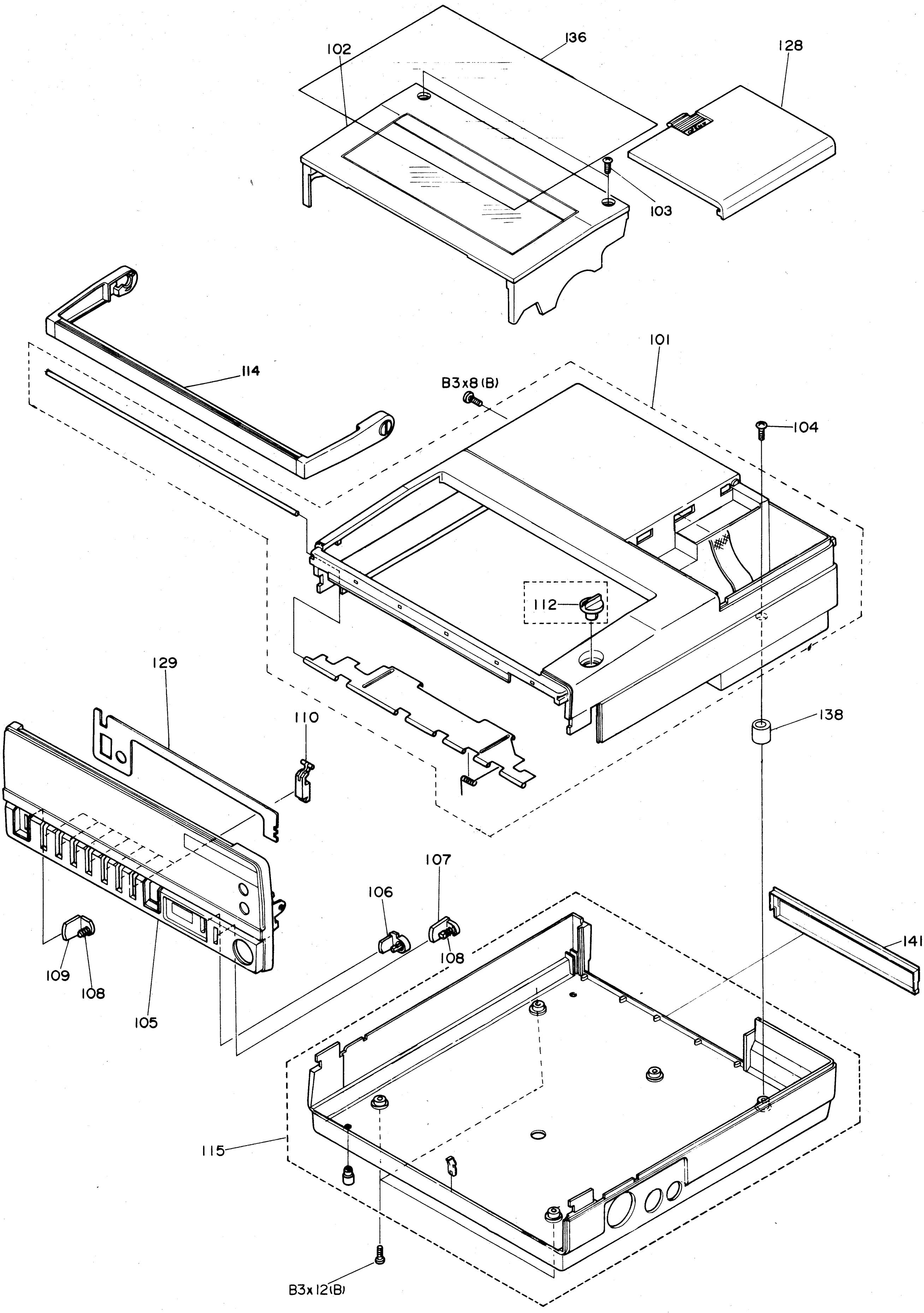
Abbre-viation	Name	Shape
W SW LW	Washer Spring washer Locking washer	
E	E-ring	
N	Nut	
Note	Internal dia is indicated for nuts and washers	

LUBRICATION

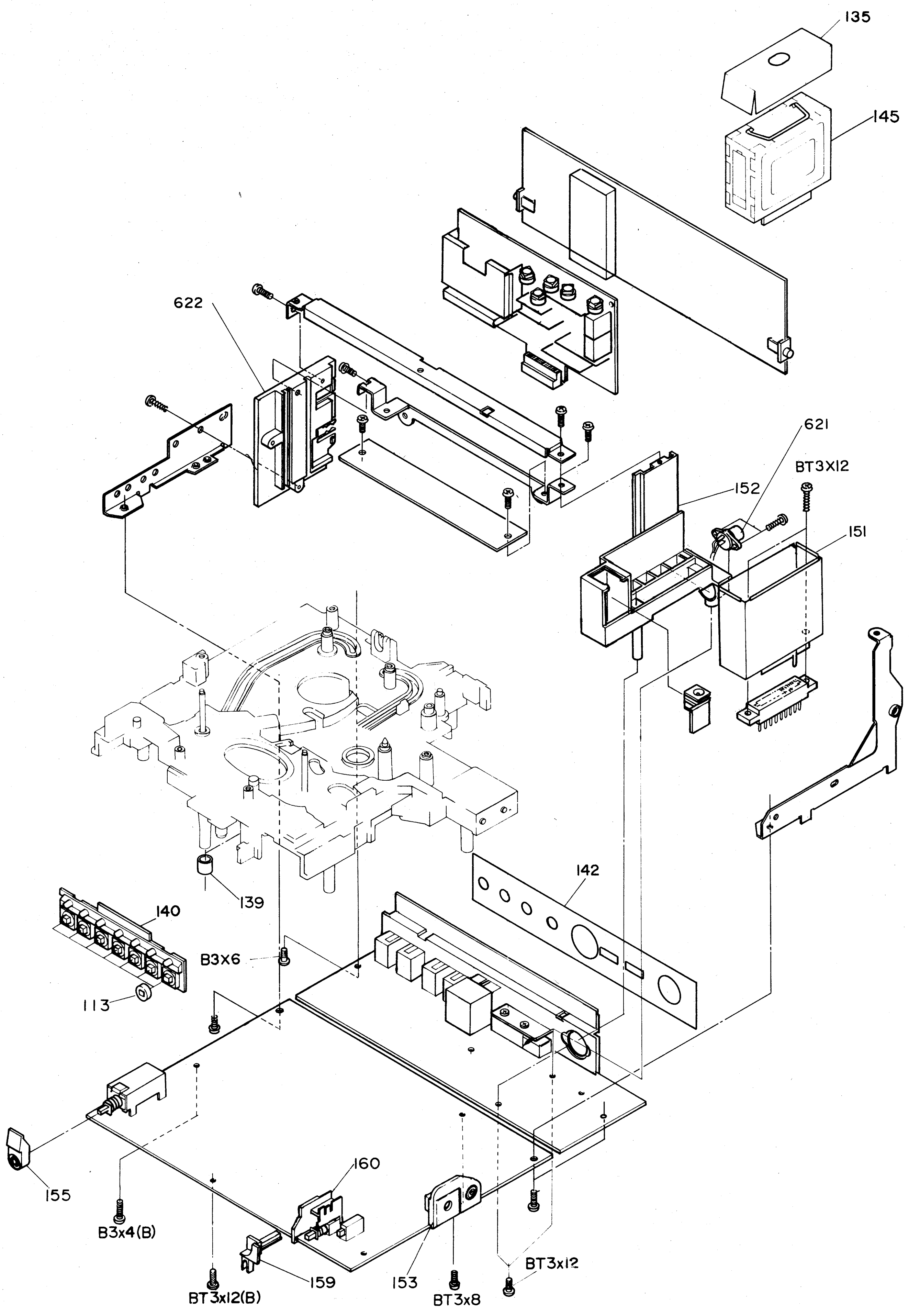
Lubrication points are shown in the exploded view diagrams by marks as follows.
Lubricants shown in the diagram are as follows.

Ⓢ Sonic slider oil (# 1600)
Ⓗ Hitazol (MO-138)
No symbol Froil (GB-TS-1)

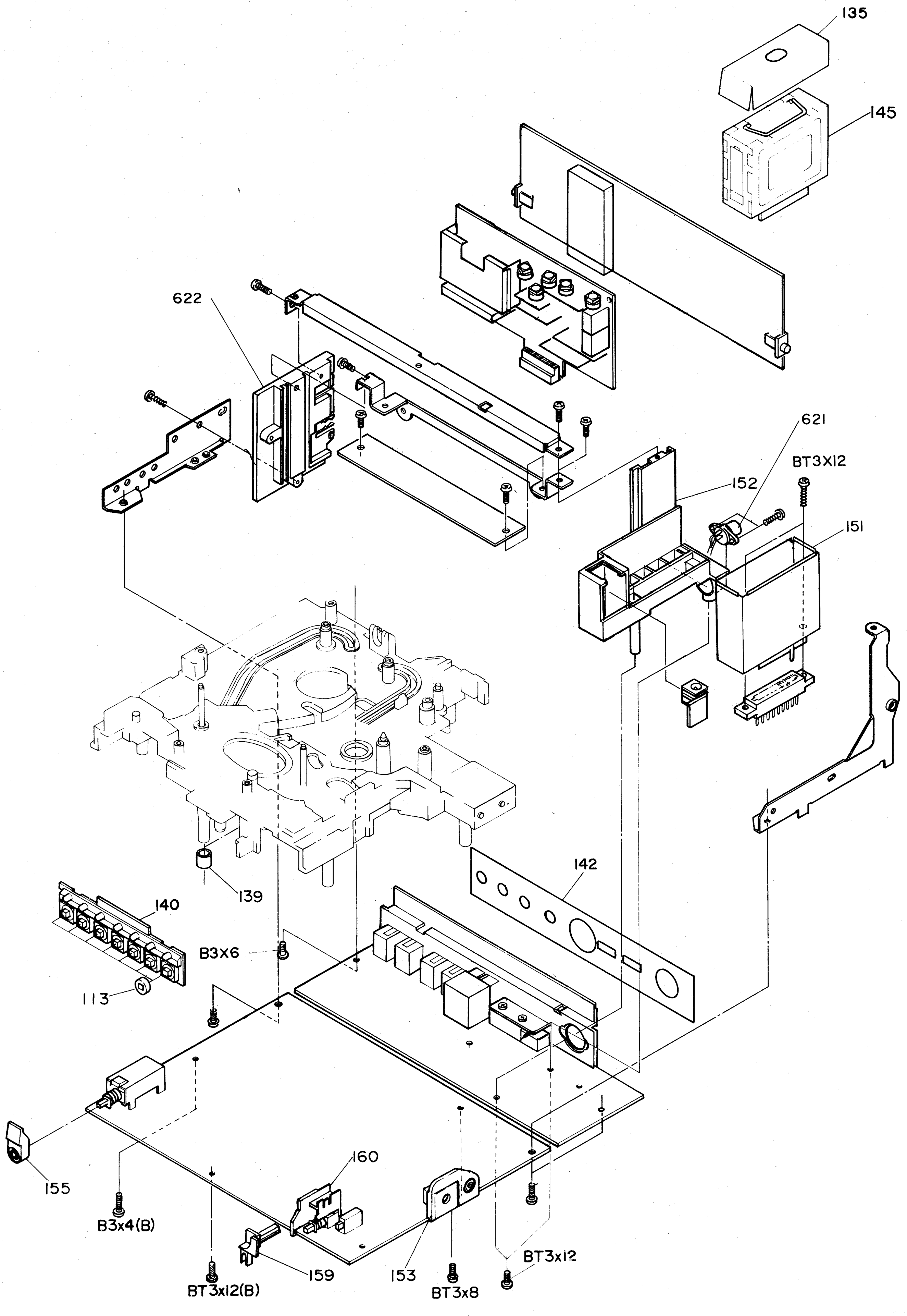
CABINET SECTION — DECK


136
102
128
103
114
101
B3x8(B)
104
112
129
110
138
107
106
141
108
109
108
105
115
B3x12(B)

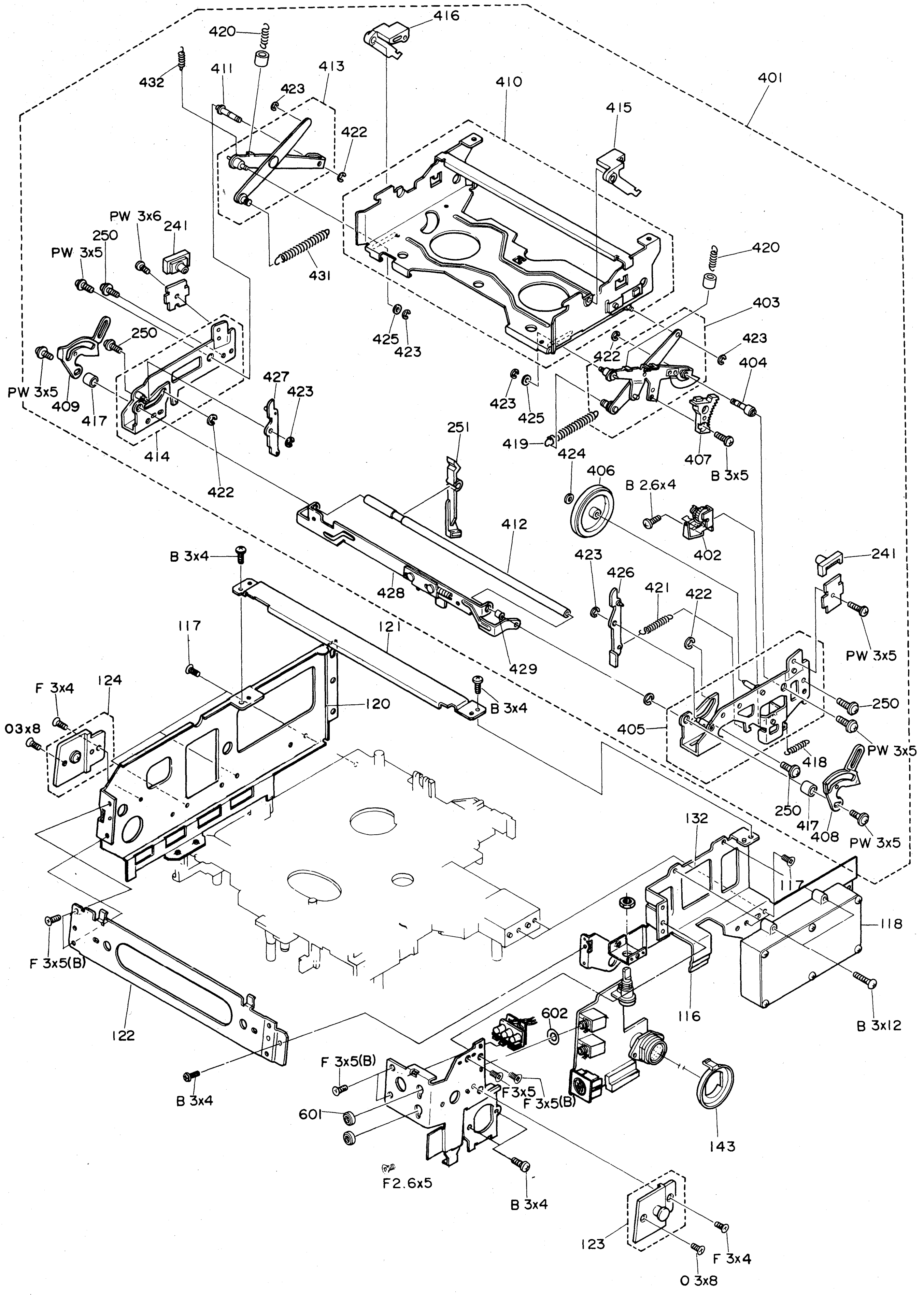
CABINET SECTION — DECK


135
145
622
621
BT3X12
152
151
142
139
140
B3X6
113
155
160
B3x4(B)
BT3x12
BT3x12(B)
159
153
BT3x8

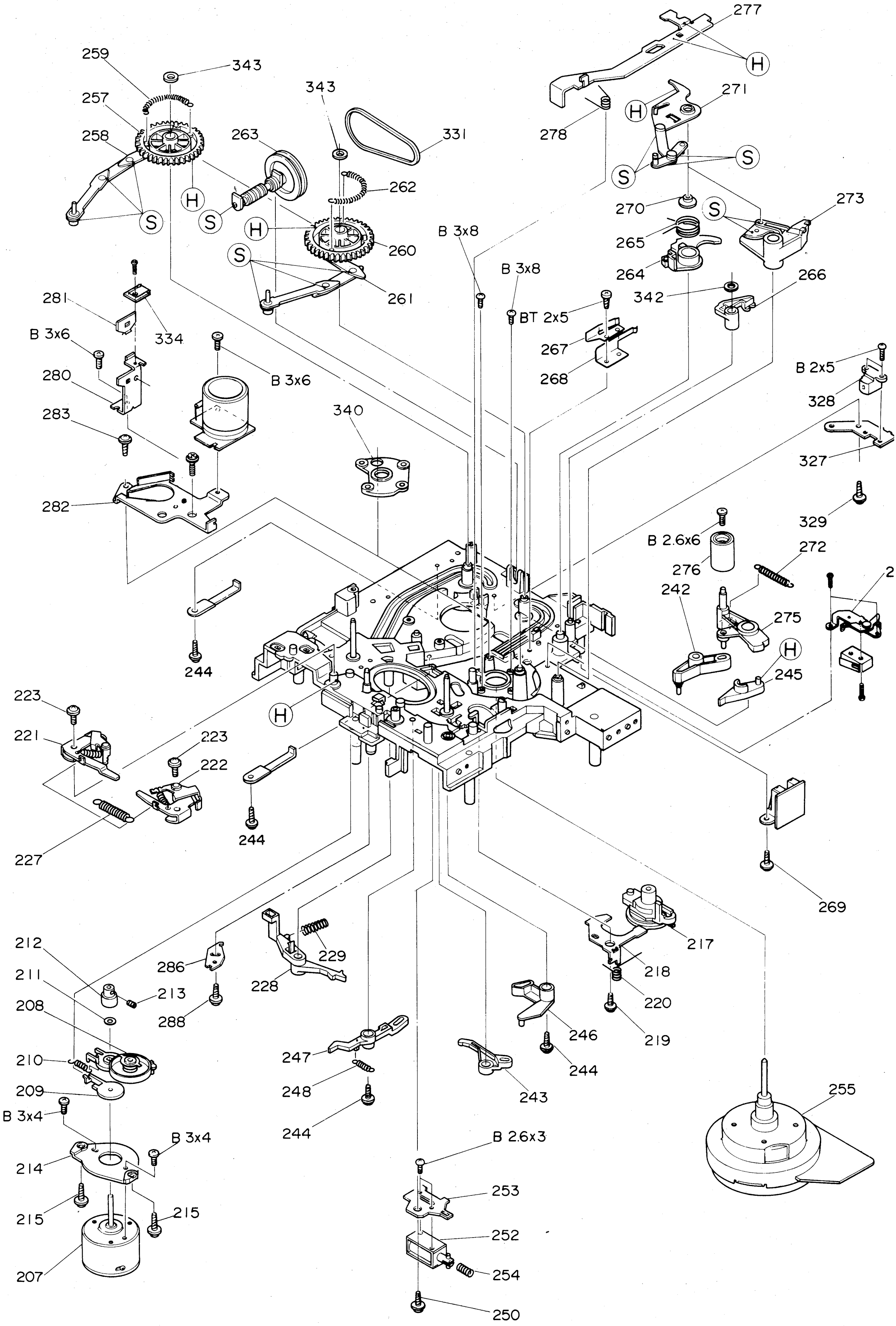
CABINET SECTION — DECK


135
145
622
621
BT3X12
152
151
142
140
139
B3X6
113
155
160
B3x4(B)
BT3x12(B)
159
153
BT3x8
BT3x12

CHASSIS ASSEMBLY/CASSETTE HOUSING ASSEMBLY — DECK


416
420
432
411
413
423
410
401
415
422
PW 3x6
241
250
PW 3x5
431
420
403
250
425
423
423
422
404
427
423
PW 3x5
409
417
414
423
425
251
419
424
407
B 3x5
406
B 2.6x4
422
412
402
241
B 3x4
423
426
421
422
428
117
121
PW 3x5
429
F 3x4
124
120
B 3x4
250
O3x8
405
PW 3x5
418
250
417
408
PW 3x5
132
117
118
F 3x5(B)
116
602
B 3x12
122
F 3x5(B)
F3x5
F 3x5(B)
B 3x4
601
143
F2.6x5
B 3x4
123
F 3x4
O 3x8

CHASSIS SECTION — DECK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S
H
265
260
B 3x8
264
S
B 3x8
342
266
281
261
BT 2x5
B 3x6
334
267
B 2x5
B 3x6
268
280
328
340
283
327
282
329
B 2.6x6
272
276
291
242
275
H
244
245
223
H
221
223
222
244
227
269
212
229
217
286
211
213
228
218
288
208
220
246
219
210
247
244
243
209
248
255
B 3x4
244
B 3x4
B 2.6x3
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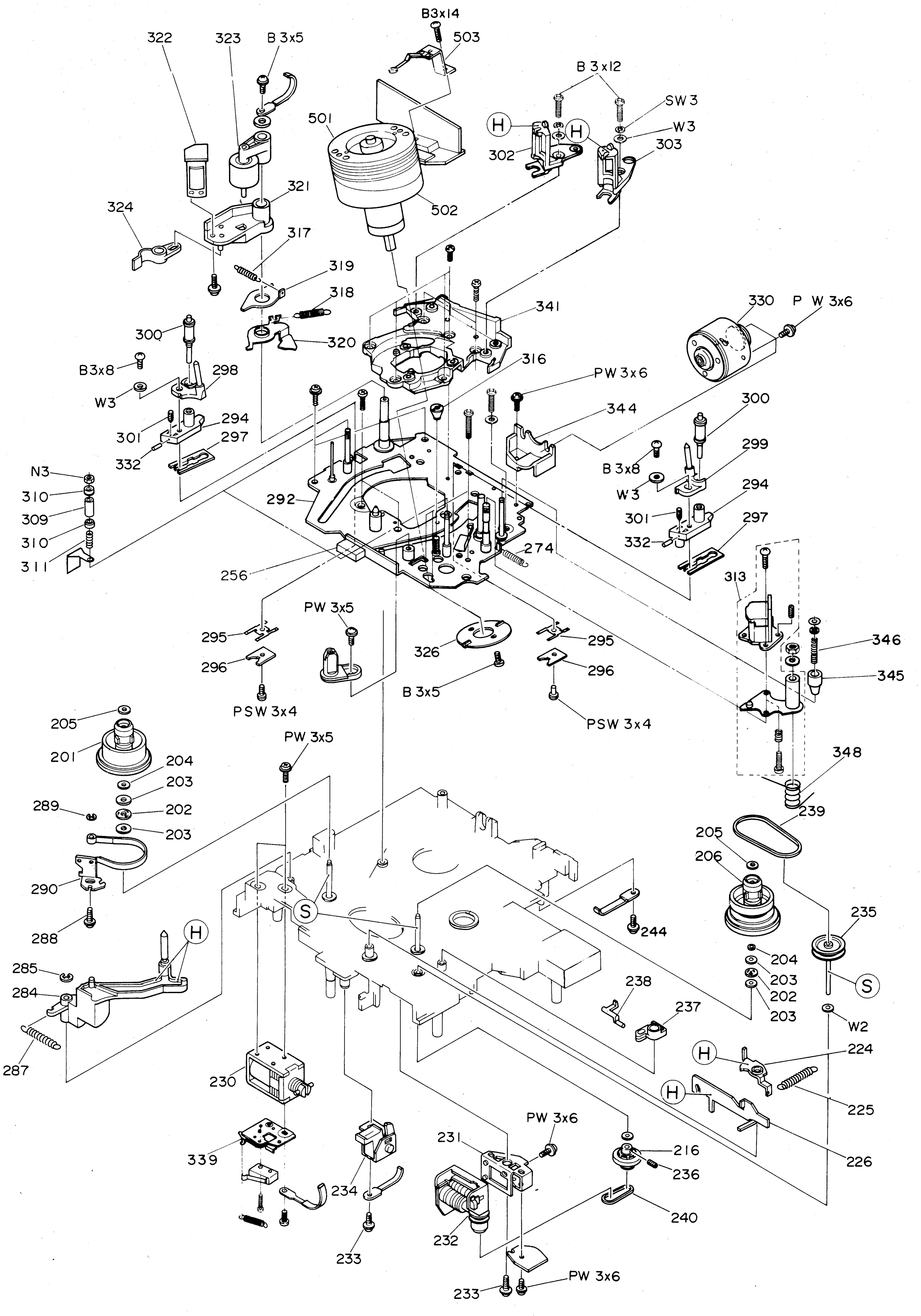
215
252
207
254
250

TAPE GUIDE SECTION — DECK


B3x14
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322
323
B 3x5
501
B 3x12
SW3
W3
303
H
H
302
502
321
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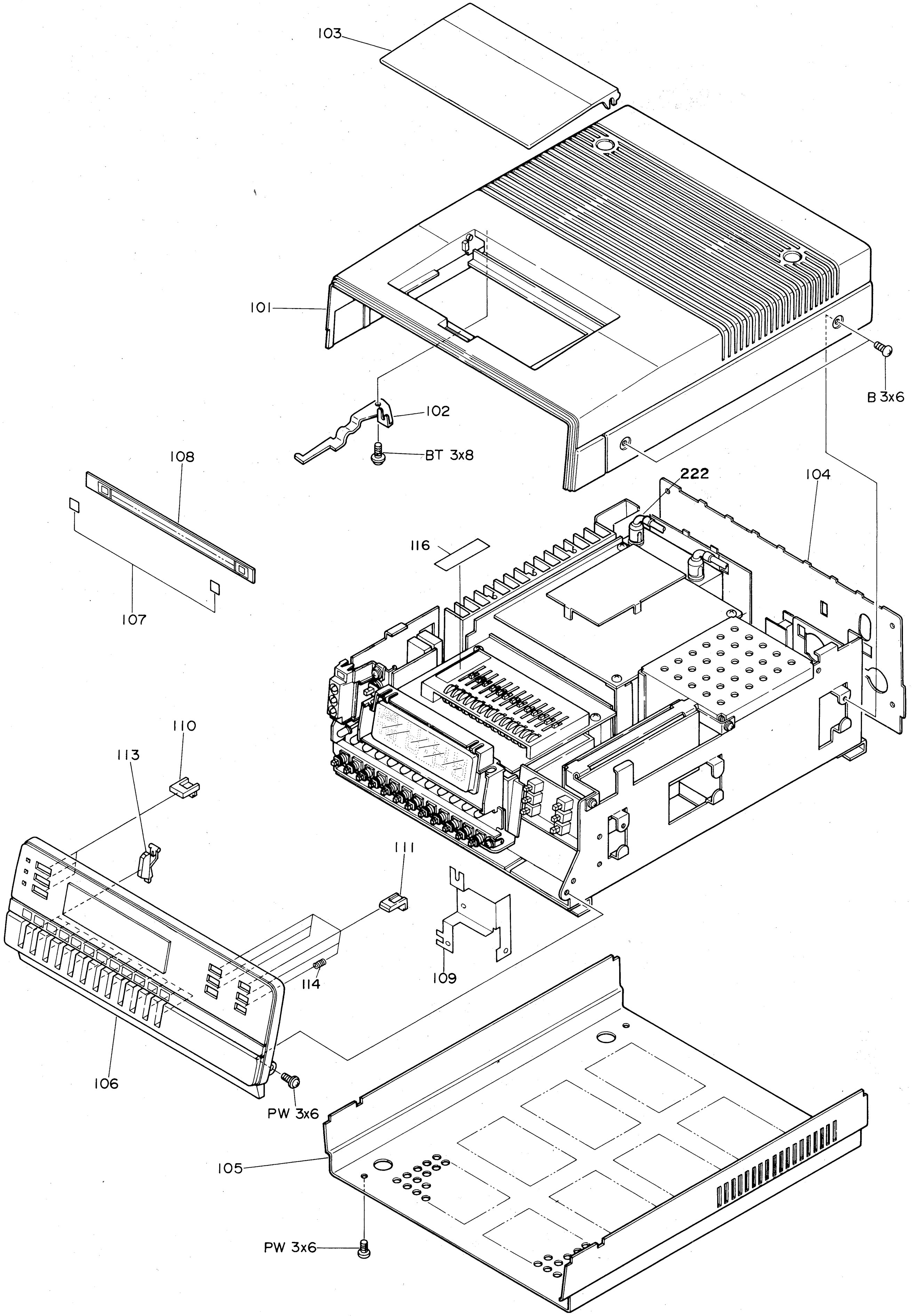
319
318
341
330
P W 3x6
300
320
316
B3x8
298
W3
PW 3x6
344
300
294
301
297
332
299
B 3x8
W3
294
N3
310
309
310
311
292
301
297
332
274
256
313
346
345
295
PW 3x5
295
326
296
296
B 3x5
PSW 3x4
PSW 3x4
205
201
204
203
202
203
289
PW 3x5
348
239
205
206
290
288
S
H
244
235
285
284
204
203
202
203
S
238
237
W2
287
224
H
H
230
225
226
339
PW 3x6
231
216
236
234
240
232
233
233
PW 3x6

CABINET SECTION — TUNER


103
101
102
BT 3x8
B 3x6
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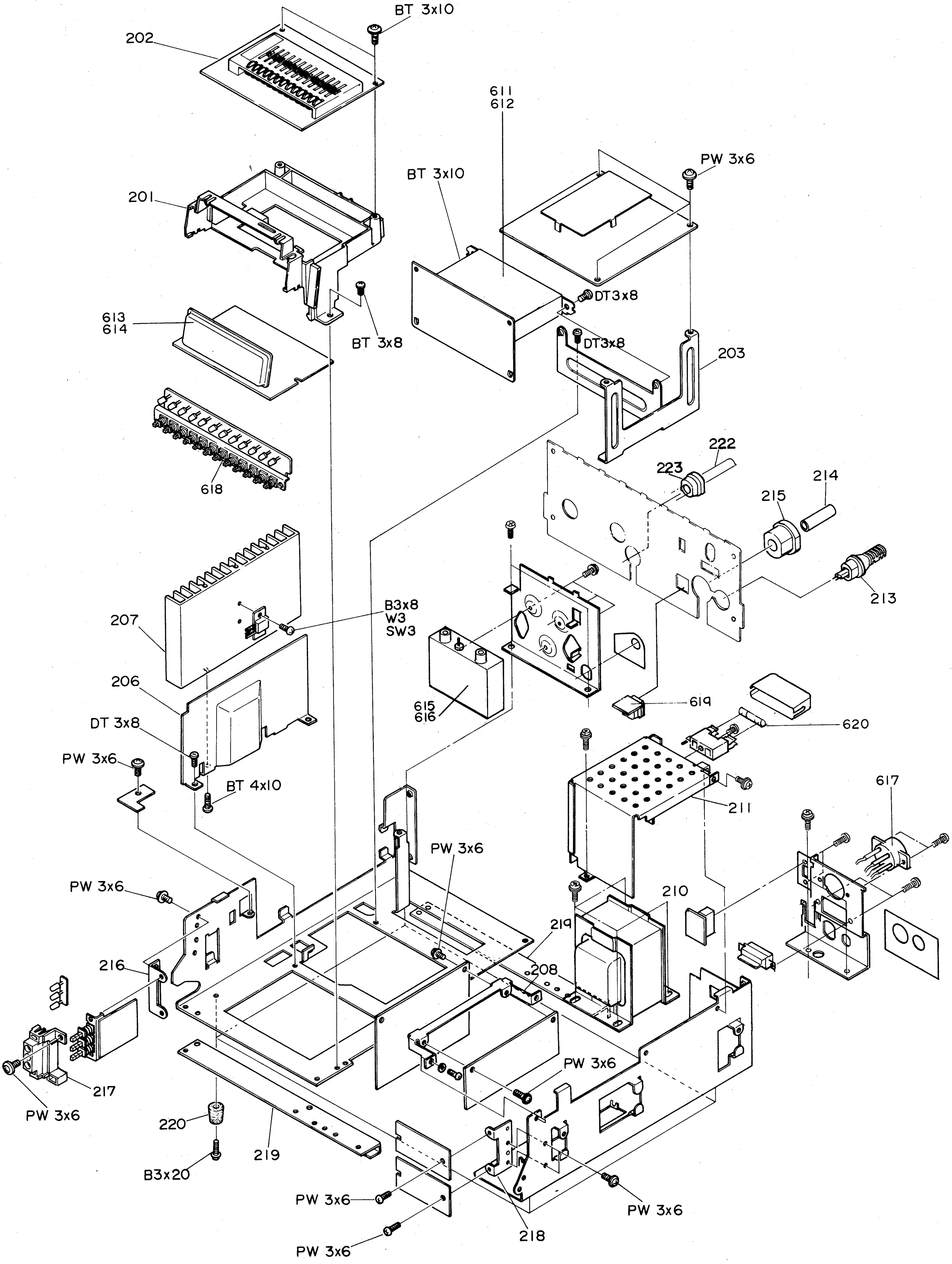
107
222
104
116
110
113
111
114
109
106
PW 3x6
105
PW 3x6

CHASSIS SECTION — TUNER



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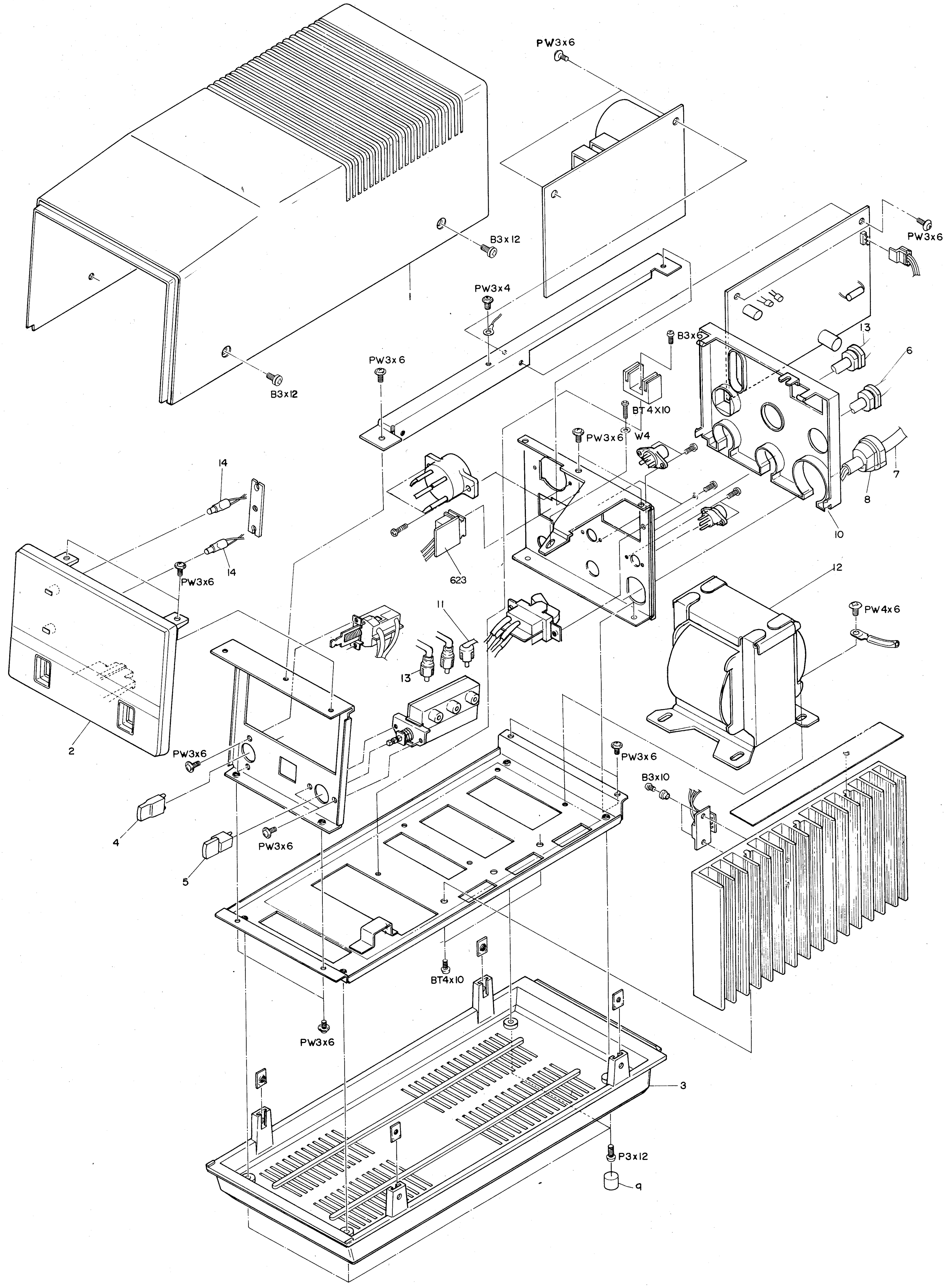
611
612
PW 3x6
BT 3x10
201
DT3x8
613
614
BT 3x8
DT3x8
203
618
222
223
214
215
213
207
B3x8
W3
SW3
206
615
616
619
620
DT 3x8
PW 3x6
BT 4x10
211
617
PW 3x6
PW 3x6
210
219
216
208
PW 3x6
217
PW 3x6
220
219
B3x20
PW 3x6
PW 3x6
218
PW 3x6

CHASSIS SECTION — ADAPTOR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PW3x6
B3x6
13
6
BT4x10
PW3x6
W4
7
8
10
14
14
PW3x6
623
12
PW4x6
11
13
2
PW3x6
PW3x6
B3x10
4
PW3x6
5
BT4x10
PW3x6
3
P3x12
9

REPLACEMENT PARTS LIST

[DECK]

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	6032959	UPPER CASE ASSEMBLY
102	6092335	CASSETTE LID
103	7547741	SPECIAL SCREW
104	8691425	BT BIND SCREW-3MMDX25MM
105	6223842	FRONT PANEL ASSEMBLY
106	6053121	BUTTON-COUNTER
107	6053131	BUTTON-MEMORY
108	6305504	SPRING
109	6053231	BUTTON-POWER
110	6052293	BUTTON-FUNCTION
112	6283241	KNOB-TRACKING
113	6589273	SPACER
114	6334251	HANDLE ASSEMBLY
115	6034762	BOTTOM CASE ASSEMBLY
115	6034762	BOTTOM CASE ASSEMBLY
118	5270372	SWITCHING REGULATOR
123	6973313	HOOK PLATE (RIGHT)
124	6973314	HOOK PLATE (LEFT)
128	6172351	BATTERY COVER
135	7755721	RF COVER
139	6860071	CONNECTING PIECE
140	5639342	7KEY BOARD ASSEMBLY
141	6860352	JACK COVER
142	7755591	JACK PLATE COVER
143	6756381	CAMERA JACK SPACER
145	5585581	RF CONVERTER (BS)
145	5585582	RF CONVERTER (E)
150	5653022	10P CONNECTOR
152	6860292	CONVERTER HOLDER
154	6860301	P.C.B HOLDER
155	6860111	CONNECTING PIECE
159	6860141	CONNECTING PIECE
160	6860151	CONNECTING PIECE
201	6413633	SUPPLY REEL TABLE ASSEMBLY
202	6750441	RETAINER
203	7787031	THRUST SUPPORT
204	7786216	POLYSLIDER WASHER
205	7778859	POLYSLIDER WASHER
206	6413654	TAKE-UP REEL TABLE ASSEMBLY
207	5576414	REEL MOTOR
208	6413663	FF/REW IDLER
209	6755521	FF/REW IDLER BASE
210	6324436	SPRING
211	7786178	POLE-SLIDER WASHER
212	6383531	FF/REW PULLEY
213	7773084	SCREW
215	7781132	BT SCREW
216	6421931	MAGNET PULLEY

SYMBOL-NO	P-NO	DESCRIPTION
217	6413684	PLAY IDLER ASSEMBLY
219	7781133	BT SCREW-3MMD
220	6545582	SPRING
221	7318322	BRAKE ARM (LEFT)
222	7318332	BRAKE ARM (RIGHT)
223	7781133	BT SCREW-3MMD
224	7318251	BRAKE LEVER
225	6540571	SPRING
226	7318072	SOLENOID SLIDER
227	6302491	SPRING
228	6755502	SUB BRAKE (SUPPLY)
229	6305412	SPRING
230	5642635	MAIN BRAKE SOLENOID
232	5559341	COUNTER
233	7781133	BT SCREW-3MMD
234	7040342	EJECT BUTTON ASSEMBLY
235	6421901	PULLEY (COUNTER)
236	7773084	SCREW
237	6756531	TAKE-UP SOLENOID ARM
238	6756522	REEL ROCK ARM
239	6354401	BELT
240	6354664	BELT-COUNTER
241	6574531	PHOTO TR HOOD
242	6860241	CONNECT ARM
243	6755471	NEUTRAL ARM
244	7781133	BT SCREW-3MMD
245	6755542	PLAY ARM
246	6756241	EJECT INHIBITING ARM (1)
247	6756251	EJECT INHIBITING ARM (2)
248	6540611	SPRING
250	8660405	PW SCREW-3MMDX5MM
251	6860162	RECORDING PREVENTION ARM
252	5642643	DC SOLENOID
254	6305442	SPRING
255	5575166	DD CAPSTAN MOTOR
257	6430421	LOADING GEAR (LEFT)
258	7318352	3 SERIES LINK
259	6302344	SPRING
260	6430422	LOADING GEAR (RIGHT)
261	7318352	3 SERIES LINK
262	6302344	SPRING
263	6413671	LOADING WORM
264	6755622	SWITCH ARM (LOADING)
265	6545571	SPRING
266	6755613	SWITCH ARM (UNLOADING)
267	6540542	SWITCH ARM STOPPER (LOADING)
268	6540552	SWITCH ARM STOPPER (UNLOADING)
269	7781133	BT SCREW-3MMD
270	6343473	ROLLER

SYMBOL-NO	P-NO	DESCRIPTION
271	7318376	PRESSURE ROLLER LINK
272	6301655	SPRING
273	6755671	SPRING
274	6540561	SPRING
275	6860211	PRESSURE ROLLER ARM
276	6383211	PRESSURE ROLLER ASSEMBLY
277	7318461	LOADING SLIDER
278	6545592	SPRING
283	7781133	BT SCREW-3MMD
284	6755683	TENSION ARM
285	7230902	E RING
286	7317951	SPRING HOOK
287	6301394	SPRING FOR DAMPER ARM
288	8691408	BIND TAPPING SCREW-3MMDX8MM (BLACK)
289	7230901	E RING
290	7318381	TENSION BAND
291	7324691	SWITCH BRACKET
294	6755515	GUIDE ROLLER BASE
295	6532911	SPRING
297	6533231	SLIDE SPACER
298	6973461	TILT POLE (SUPPLY)
299	6973471	TILT POLE (TAKE-UP)
300	6344252	GUIDE ROLLER SHAFT
301	7773087	SET SCREW
302	6977021	CATCHER (TAKE-UP)
303	6977011	CATCHER (SUPPLY)
309	7575242	TAPE GUIDE
310	7543831	GUIDE FRANGI
311	6304903	SPRING
313	5448391	AUDIO CONTROL HEAD
315	6304901	SPRING
316	7549271	X-ADJUST SCREW
317	6323673	SPRING
318	6322211	PRESSURE ROLLER ARM SPRING
319	7320402	IMPEDANCE OPERATING ARM (2)
320	7370422	IMPEDANCE OPERATING ARM(1)
321	6860171	HEAD ARM
322	5448151	FULL ERASG HEAD
323	6383526	IMPEDANCE ARM
324	6860272	TENSION ARM OPERATION
326	7060951	MG PLATE
328	5445193	HEAD
329	7781133	BT SCREW-3MMD
330	5576352	LOADING MOTOR
331	6354921	BELT-LOADING
332	7544352	LOCK SHAFT
334	0170307	DEW SENSOR
339	7370254	BRACKET
340	6860251	SPACER
341	6977031	CYLINDER BASE

SYMBOL-NO	P-NO	DESCRIPTION
342	7787601	WASHER
343	7787602	WASHER
346	6305901	SPRING
347	8741104	BIND SCREW-2MMDX4MM
348	6546161	SPRING
349	6541301	SPRING
349	7370371	ACE HEAD BASE
401	7041942	CASSETTE HOLDER ASSEMBLY
402	6347261	GOVERNER
403	7318263	HOLDER LINK
404	7546961	SHAFT
405	7318684	HOLDER BRACKET (RIGHT)
406	6381954	DUMPER WHEEL
407	6430391	RACK GEAR
408	7318403	SYNCHRO ARM
409	7318402	SYNCHRO ARM
410	7318485	CASSETTE UP ASSEMBLY
411	7546981	SHAFT
412	7546971	SHAFT
413	7318293	HOLDER LINK (LEFT)
414	7318673	HOLDER BRACKET (LEFT)
415	6755742	PRESSURE ARM (RIGHT)
416	6755752	PRESSURE ARM (LEFT)
417	7575253	SPACER
418	6300147	SPRING
419	6540671	SPRING
420	6540662	SPRING
421	6300111	SPRING
422	7230902	E RING
423	7230901	E RING
424	7778859	POLYSLIDER WASHER
425	7787411	WASHER
426	7318304	LOCK ARM (RIGHT)
427	7318303	LOCK ARM (LEFT)
428	7318342	SYNCHRO PLATE
429	6755531	SPACER RING
431	6540673	SPRING
432	6541011	SPRING
501	5458165	UPPER CYLINDER
502	5458252	LOWER CYLINDER ASSEMBLY
503	5687401	BRUSH
601	6759301	NUT
602	7779867	WASHER
611	5677261	FM ANTENNA JACK
612	6860281	SIDE PEACE

SYMBOL-NO	P-NO	DESCRIPTION
		FOR ACCESSARIES
	5639321	REMOTE CONTROL BOX
	5731013	EARPHONE
	5895992	AERIAL CABLE (BS)
	5896701	AERIAL CABLE (E)

SYMBOL-NO	P-NO	DESCRIPTION
		FOR PACKING MATERIAL
	7861691	CUSHION
	7861701	CUSHION
	7906241	CARTON BOX (BS)
	7906243	CARTON BOX (E)

[TUNER]

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	6034282	UPPER CASE ASSEMBLY
102	6533441	SPRING
103	6172235	CHANNEL COVER
104	6042921	REAR PANEL ASSEMBLY (BS)
104	6042922	REAR PANEL ASSEMBLY (E)
105	6042931	BOTTOM COVER ASSEMBLY
105	6042932	BOTTOM COVER ASSEMBLY (E)
106	6223685	FRONT PANEL ASSEMBLY (BS)
106	6223686	FRONT PANEL ASSEMBLY (E)
107	6464834	CHANNEL CARD (E)
107	6464835	CHANNEL CARD (BS)
108	6756615	CARD HOLDER
109	7322512	CONNECTION PLATE
110	6052402	BUTTON-POWER
111	6052412	BUTTON-TIMER
113	6052443	BUTTON-CHANNEL
114	6305561	SPRING
202	5008681	PRE-SET VOLUME (E)
202	5008682	PRE-SET VOLUME (BS)
210	5212841	POWER TRANS
212	5602021	SEESAW SWITCH
213	5746094	POWER CORD (BS)
213	5746157	POWER CORD (E)
214	5898381	10P DIN CORD
215	6794261	NYLON BUSHING-10PIN CORD
217	6860311	LED HOLDER
220	6573411	RUBBER LEG
221	6794091	RUBBER BUSH
223	6794276	BUSHING
		FOR PACKING MATERIAL
	7860801	CUSHION (REAR)
	7860811	CUSHION (FRONT)
	7906001	CARTON BOX (BS)
	7906002	CARTON BOX (E)

[ADAPTOR]

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
1	6033854	TOP CASE
2	6223464	FRONT PANEL ASSEMBLY (BS)
2	6223465	FRONT PANEL ASSEMBLY (E)
3	6034173	BOTTOM CASE ASSEMBLY (BS)
3	6034174	BOTTOM CASE ASSEMBLY (E)
5	6052701	BUTTON-SELECT
6	5746094	POWER CORD (BS)
6	5746157	POWER CORD (E)
7	5897663	10P DIN CORD
9	6573421	RUBBER LEG
12	6224011	REAR PANEL ASSEMBLY (BS)
12	6224012	REAR PANEL ASSEMBLY (E)